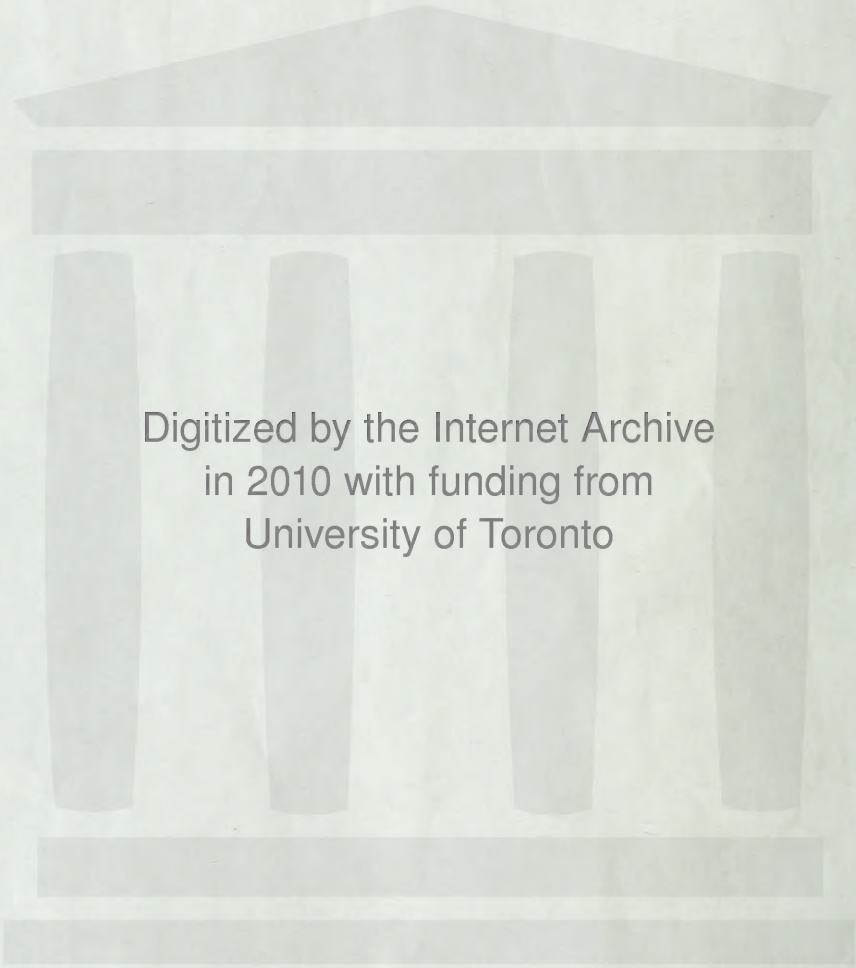

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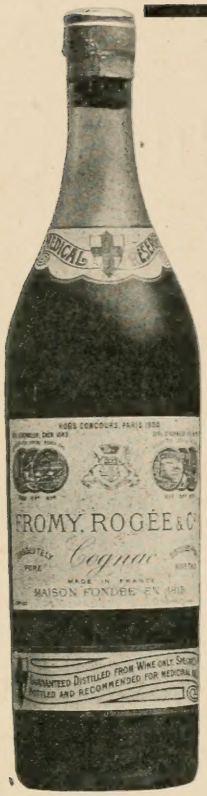

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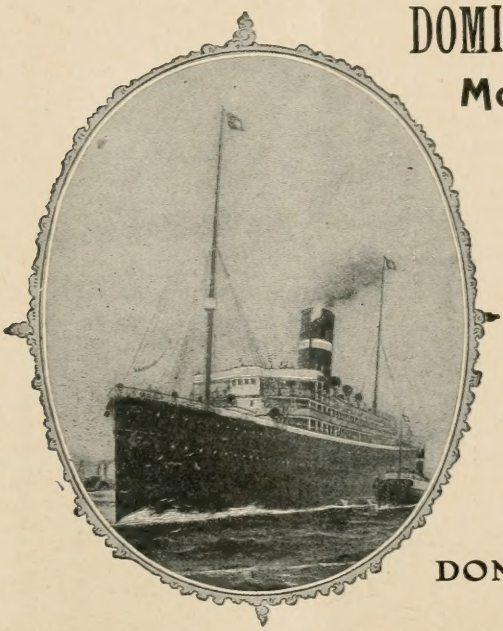

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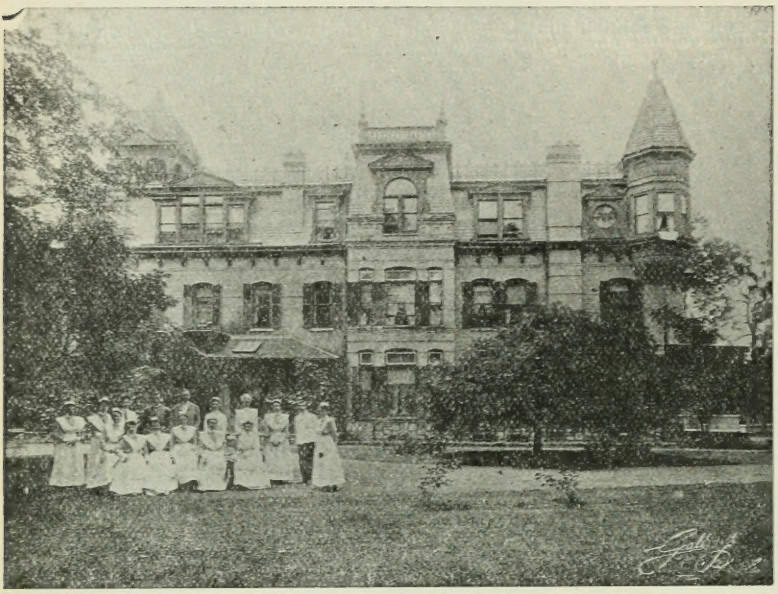

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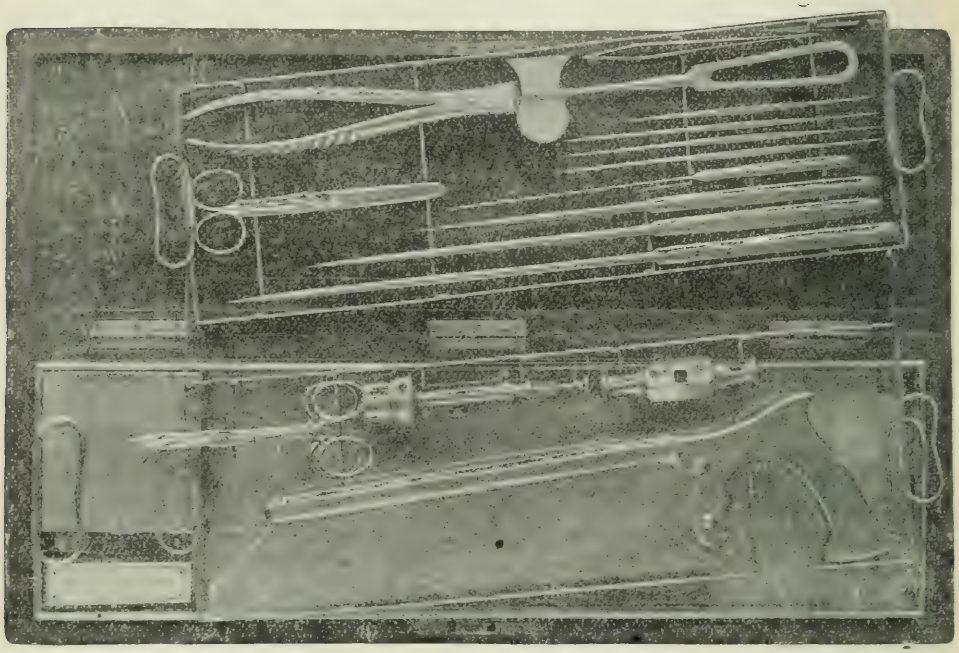

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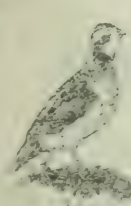

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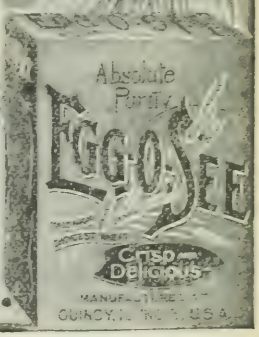

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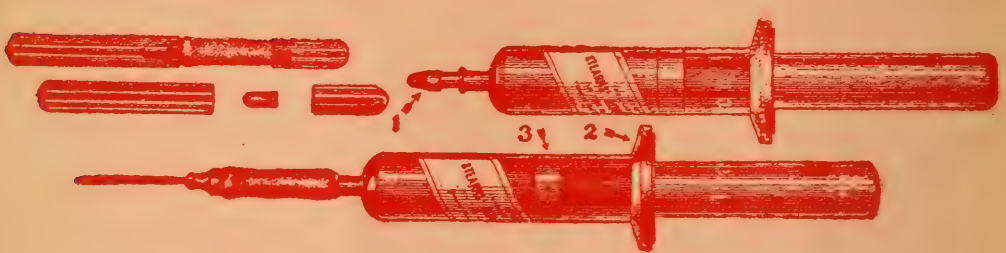

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THE

Montreal Medical Journal

A Monthly Record of the Progress of Medical and Surgical Science.

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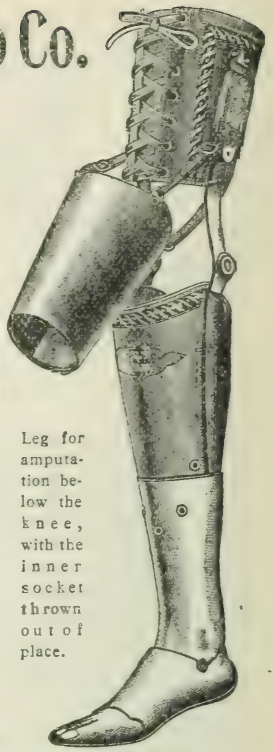

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THE
MONTREAL MEDICAL JOURNAL.

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A STUDY OF THE ABSORPTION OF FATS IN INFANTS.

BY

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Recently the fat content of the infant's food has been attracting more attention than heretofore, and some of the questions that have arisen are:

What is the normal proportion between the intake of fat and the fat appearing in the faeces?

Is the fat appearing in the faeces fat that has escaped digestion, or is it fat formed in the intestine as a result of metabolism?

In what form do the fatty compounds exist in the faeces?

With these questions before us we undertook a series of experiments, hoping, by observing closely the intake of fat and the output in the faeces of infants, to gain some knowledge that would help us in solving these problems. The investigations extended over a period of about one year, during which time we have conducted seven experiments on infants varying from 17 days to 108 days of age.

PHYSIOLOGY OF FAT DIGESTION.

Fat has an inhibitory action upon the stomach; it remains longer in the stomach than either the proteids or carbohydrates, and the amount of gastric juice secreted is weaker and less than with a proteid diet. The gastric juice possesses a certain degree of fat-splitting power, but how much is due to the enzyme lipase and how much due to bacterial action is a question that is still under investigation.

In the duodenum, through the action of lipase which is present in the pancreatic secretion the fats are hydrolized with the formation of glycerine and the corresponding fatty acids. The oleic action dissolves the solid fatty acids like palmitic and stearic and renders them soluble in bile. They are in part converted into soaps. The soaps and fatty acids are synthetized during the process of absorption by the epithelial cells of the intestinal wall. Fat is found principally in the adipose tissue and bone marrow, but every tissue of the body contains a certain amount. The fat in the different parts of the body is not of the same composition. Muscle

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fat is not the same as the fat of subcutaneous adipose tissue. The question suggests itself, Have the various tissues of the body the power of synthetizing glycerine and fatty acids into combinations suitable for their own metabolism?

When fat is transferred from one part of the body to another it is broken up into a soluble form and conveyed by the blood. In what form it really exists is a disputed point at present. Monk has shown that 0.15 gram of sodium oleate per kilo, or less of the palmitate or stearate, are fatal to rabbits. A. S. Lovenhart questions the existence of soaps in the blood, and thinks that Hoppe Seyler's methods of extracting soaps from the blood are open to doubt. Hoppe-seyler found from 0.05 to 0.1 per cent. of soap in the blood, and, more recently, Oskar Klotz has shown soap to exist in the tissues in calcareous degeneration.

The experiments of Rachford and Pflüger show that the fatty acids are very slowly acted upon by weak alkaline solutions at 37° C., and free fatty acid has been found in the blood by several observers.

It is quite probable that, besides the neutral fat existing in the white corpuscles, small quantities of soap and fatty acid may be found in the blood stream, and are thus carried from one part of the body to another.

Chemistry of Fat.

The fats found in the adipose tissue are combinations of glycerine with fatty acids. Fatty acids form a series of acids derived from the monatomic alcohols, by oxidation. Thus, to take ordinary ethyl alcohol, C_2H_5—OH, the first stage in the oxidation is the removal of two atoms of hydrogen to form aldehyde, $CH_4C{=}O$; then on further oxidation these are replaced by one of oxygen to form acetic acid, CH_3COOH. A similar acid can be obtained from all the other alcohols.

Glycerine is a triatomic alcohol $C_3H_5\begin{cases}OH\\OH\\OH\end{cases}$ and we may have one, two, or three hydroxyl groups replaced by an acid radical.

In the neutral fats we have all three replaced, so we speak of tristearin or tripalmitin, etc.

Olein is not a member of the fatty acids series proper, but belongs to a somewhat similar series of acids known as the acryllic series, of which the general formula is $C_N\ H_{2n-3}OOH$.

It is the eighteenth term of the series, and its formula is $C_{18}H_{33}OOH$.

Analytical results show that butter fat is essentially a mixture of various esters, those of butyric. palmitic, and oleic acids being the leading constituents.

Hehner and Mitchell obtained but very small proportions of stearic acid, and in some cases none. James Bell's experiments would indicate that several acid radicals were present in the same molecule—thus:

$$C_3H_5 \begin{cases} OC_4\ H_7\ O\text{—butyric.} \\ OC_{16}\ H_{31}\ O\text{—palmitic.} \\ OC_{18}\ H_{33}\ O\text{—oleic.} \end{cases}$$

Glycerine may be combined with acids in the laboratory by heating them together in a sealed tube to a temperature of 240° C. for twenty-four hours. The reverse process—hydrolization of the glycerides—can be brought about by the action of steam at 300°C.

In the body both the union and splitting up of the glycerides are affected by the agency of an enzyme or enzymes, which are found widely distributed in the body.

In the normal process of things, fat undergoes complete oxidation with the formation of carbon dioxide and water. Besides this oxidation process, there is a process of elimination going on. Thus, we find fat and soap in the bile, and Cyril Corlette's experiments show that fatty acids and soaps are formed in isolated portions of the small intestine of dogs. After a meal of fatty acids, Otto Frank always found in the small intestine more neutral fat than during hunger. Herman and Voit showed that this was excreted into the small intestine, not formed *in situ* from fatty acids.

CHART I.

Time of Feeding.	Amount Drawn.	Amount Fed.	Amount Sample.	Stool.	Regurgitated.	Temperature.	Weight.
	c.cm.	c.cm.	c.cm.				
4.30 p.m.	31	27.9	3.1	—	—	—	—
6.30 "	40	36.0	4.0	—	—	—	—
8.30 "	35	31.5	3.5	—	—	98°	—
11.30 "	31	27.9	3.1	—	—	—	—
2.30 a.m.	32	28.8	3.2	—	—	—	—
5.30 "	43	38.7	4.3	—	—	—	—
8.30 "	46	41.4	4.6	—	—	98.2°	3,200
10.30 "	50	45.0	5.0	—	—	—	—
12.30 "	33	29.7	3.3	—	1 p.m.	—	—
2.30 "	32	28.8	3.2	—	—	—	—

Our first object was to establish, if possible, the normal relation between the intake and output of fat—first in the healthy suckling and second in the artificially-fed infant.

Our first experiment was conducted on a male infant 17 days old in the Montreal Maternity Hospital. Two nurses were allotted the task of watching the child night and day during the time of the experiment. They were instructed not to use soap in the cleansing of the child's buttocks, nor to employ ointments nor administer drugs. The nourishment for the baby was drawn from the mother's breast with a breast pump and placed in a graduated bottle (graduated in cubic centimetres). The nipple was fitted directly to the neck of the bottle and the infant fed with the desired quantity. The difference between the reading taken before and the reading taken after the feeding gave the exact amount of food taken by the infant. With a pipette the nurse removed a proportional amount from each feeding for analysis. The baby was fed every two hours in the daytime and every four hours at night.

All breast pumps, bottles, nipples, pipettes, and other utensils used in the collection of the milk were thoroughly washed in cold water, scrubbed with a brush, rinsed with warm water, and boiled. While not in use they were kept in a solution of boracic acid. Before being used the feeding bottle and breast pump were warmed by placing them in water at 40°C.

The faecal discharges were collected upon pieces of washed gauze (fat and soap free) about one yard square folded in the usual way. In the triangular piece, which comes up between the legs, a hole was cut to allow the penis to pass through. Over the gauze was placed a piece of gutta-percha tissue, a little larger than the piece of gauze. In this also a hole was cut for the passage of the penis. Over all was pinned the diaper. In this way the fæces were obtained uncontaminated by urine. The gauze received the fæces, the diaper the urine, and the rubber tissue between kept them separated. The baby was weighed at the same hour each morning before feeding.

With the artificially-fed children the same rules were observed, except that the food was prepared each morning by the nurse in charge according to the formula prescribed. The quantity and number of feedings in twenty-four hours were regulated according to the age of the child.

A sample of the food prepared was sent to the laboratory each day for analysis. Male children used, and the stools collected in the same manner as in the breast-fed infant.

Instead of using charcoal to colour the faeces at the beginning and end of each experiment, the fluid extract of haematoxylin was used, and found to give very satisfactory results. Five milligrammes in a drachm of water were given to the babies, and usually appeared in the faeces within eight hours after administration.

Chemical Methods.

In the examination of the food the specific gravity, reaction, total solids, fat, proteids, and carbohydrates were determined.

The Westphal balance was used to determine the specific gravity. The degree of acidity was determined by titrating with decinormal KOH, using phenolphthalein as an indicator, each $\frac{1}{10}$ c.cm. of solution used counting as one degree of acidity. The total solids were found in making the weighings necessary for the determination of the fat. In the determination of the fat Soxhlet's method, as described by Allen in his work on commercial organic analysis, was used, petrolic ether being used as the solvent.

Determination of Proteids.—For the determination of total nitrogen in milk, 5 c.cm. were measured directly into a Kjeldahl digestion flask, and the regular Gunning method employed. The total nitrogen multiplied by 6.38 gave the total proteid.

Determination of Milk Sugar.—For the determination of lactose the gravimetric Fehling's process, as modified by O'Sullivan and Defren, was used. The weight of the cupric oxide was converted into lactose equivalent by using the Defren table.

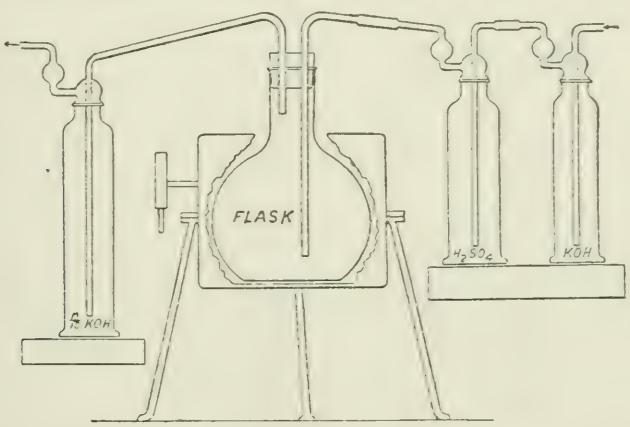

Fig. 1.

In the examination of the faeces the fats, fatty acids, and fatty acids present as soaps were determined. The reaction of the fæces and the amount of decinormal KOH neutralized by the volatile acids driven

off in the process of drying were noted. It was decided to make total quantity determinations rather than percentage determinations, as promising the most accurate results.

The gauze pads, containing the faecal discharges, were received in the laboratory by 12 o'clock each day. Each stool was folded in the gauze and covered with gutta-percha tissue. The gutta-percha tissue was removed and the gauze rolled so as to allow of its insertion into extraction thimbles made of fat-free paper. The thimbles containing the faeces for the twenty-four hours were then placed in the drying apparatus (Fig. 1) and dried for twenty-four hours or longer, if necessary, at a temperature of 95°C. The air was drawn through the flask by means of a suction pump. The air, before entering, was passed through a strong solution of potassium hydrate to remove carbon dioxide, and then through some sulphuric acid to dry it. After leaving the flask it was made to bubble through a measured quantity of decinormal potassium solution, the amount of neutralization determined by titrating with decinormal hydrochloric acid, using phenolphthalein as an indicator.

After drying, the thimbles were placed in a Soxhlet apparatus and extracted with petrolic ether for two hours, the ether siphoning every ten minutes. The ether was removed by evaporation and the fatty acids converted into soaps by treating with strong potassium hydrate. The whole was washed into a separator funnel using water and about 200 c.cm. of ether. The funnel was well shaken, and after standing for twenty-four hours the bottom layer containing the fatty acids in the form of soap was run off. The ether was washed several times with water, placed in a flask, evaporated off, and the residue dried to constant weight and weighed. This weight, minus the weight of the flask, represents the free neutral fat plus cholesterin, lecithin, etc.

The amount of non-saponifiable material was determined and deducted.

The fatty acids were set free by treating with strong hydrochloric acid placed in a separator funnel and extracted with ether, the same as in the case of the fats.

The thimbles containing the faeces, with contents remaining after the ether extraction, were acidified with hydrochloric acid and extracted with alcohol. The extract was evaporated to dryness, dissolved in ether, and washed with water several times in a separator funnel. The ether extract containing the fatty acids present as soaps was evaporated to dryness and weighed.

In this way the fats were separated from the fatty acids, the non-saponifiable material, and the fatty acids present as soaps.

The iodine numbers were obtained by Huble's method as described by Allen.

Tests of the methods described were conducted, using known quantities of fat, fatty acids, and soap, and found accurate.

Blanks were conducted with all materials used, and the ether and alcohol were redistilled before using. Experiments were conducted in duplicate when possible.

Experiment No. 1.

Male infant, 17 days old. Weight at birth, 3,125 grams; weight at the beginning of the experiment, 3.170 grams; weight at the end of experiment, 3,230 grams. This infant was fed on human milk obtained as already described. The mother was a primipara, 26 years of age. She had been detained in the hospital to have a repair of the perineum performed, and was confined to bed during the time of the experiment. The results of the analyses of the milk are shown in Table I. Chart I is a copy of the nurse's report showing the amount of milk obtained in pumping the breasts, amount fed to the infant, amount saved for analysis, temperature and weight.

In seven days the baby received 2,261 grams of milk containing 72.7 grams of fat; 2.127 grams of fat were regurgitated, leaving 70.59 grams in the stomach to be digested. During this period the infant had ten stools, containing 0.748 gram of fat, 2,123 grams of fatty acid, and 0.630 gram of fatty acid present as soaps. Volatile fatty acids given off during the process of drying the faeces neutralized on a daily average 16.8 c.cm. decinormal KOH solution.

Leaving out of consideration for the present the volatile fatty acids, and calculating the other constituents as fat, we have a total of 3.501 grams, or 4.95 per cent. of the total intake.

In Table VIII we have tabulated the percentage relation to intake of the fats, fatty acids, and fatty acids present as soaps.

Experiment No. 2.

Male infant, 85 days old, who had come to the Foundling Hospital four days before the commencement of the experiment. He was well nourished and appeared healthy. The stools contained some casein curds and were slightly alkaline in reaction. During a period of two days we observed the intake and output of fat. The infant was on a modified whey mixture, giving an analysis as follows: Fat, 2.32 per cent.: proteid, 96 per cent., sugar, 5.25: the reaction slightly acid, although supposed to have 5 per cent. of alkalinity.

The total fat in the faeces, calculated the same as in the previous experiment, was 5.4 per cent. of the fat intake, the three constituents being absorbed in about the same proportion as in Experiment 1.

Experiment No. 3.

Infant 94 days old. The fat in the food was reduced to 0.176 per cent. (Table III), or from 11 grams to 1 gram in twenty-four hours. During the two days the child consumed 2.11 grams of fat, and the total fat appearing in the fæces, amounted to 57.48 per cent. of intake. By referring to Table VIII we see that the fats contributed 13.41 per cent. of this amount, the fatty acids 1.56 per cent., and the fatty acids present as soaps 42.51 per cent.

Experiment No. 4.

Infant 107 days old. Was a test made during the resting period between Experiments 5 and 6. The fat in the food was reduced to the same amount as in the previous experiment. The proportion of fat appearing in the faeces were 5.32 per cent., fatty acids 0.43 per cent., fatty acids present as soaps 16.54 per cent., or a total fat loss, as compared with intake, of 22.3 per cent.

Experiment No. 5.

Infant 101 days old. Olive oil was added to the food in this experiment, and the total fat intake increased thereby to 7.25 grams in the two days experiment. The relative proportion of the fat in the faeces increased to 5.25 per cent., the fatty acids to 6.82 per cent., and the fatty acids present as soaps were reduced from 42.5 per cent., to 3.65 per cent. (Tables IV and V). In two days the child gained 69 grams.

Experiment No. 6.

Infant 100 days old. Palmitin was added to the olive oil and the melting point raised to 35.5° C. The total quantity of fat taken was 11 grams. The total fat in the faeces amounted to 15.38 per cent. of the intake, slightly less than in the previous experiment.

Experiments 5 and 6 were not altogether satisfactory, on account of the difficulty of obtaining a perfect emulsion of the fats, with the result that the infant was placed at a disadvantage in digesting them.

Experiment No. 7.

This infant was 22 days old and weighed 3,189 grams at the beginning of the experiment. The child was fed on a whey mixture, a daily analysis of which is shown in Table VII. During the six days of the experiment the child was given 2,637 grams of milk, containing 63.1 grams of fat; he regurgitated 1,484 grams of fat, leaving a balance of 61.56 grams to be digested. In the six days the infant passed 21 green-

ish-yellow stools, the first 12 of which were alkaline in reaction, the remainder acid. The fæces contained 2,062 grams of fat, 14.496 grams. of fatty acid, and 5.161 grams fatty acid present as soap (Table VII). The percentage relation to the intake of fat is shown in Table VIII. The infant gained 113 grams in the first five days of the experiment. One week after the conclusion of the experiment the child lost weight rapidly and died three weeks later.

Dr. McCrae's *post-mortem* report showed a hæmorrhage into the right ventricle, probably there from birth; acute left purulent otitis media, and fatty infiltration of the liver.

The interesting points in this experiment are that most of the fat was split up and appeared in the fæces as fatty acids and soaps, and while other clinical signs were favourable, the analysis of the fæces showed that the infant was losing by the bowel about 35 per cent. of the fat intake.

Summary.

The stools of a normal breast-fed infant are acid to litmus. This acidity is due principally to the presence of volatile fatty acids. In Experiments 1 and 7, when the stools were strongly acid, the buttocks did not become excoriated. During Experiments 3 and 4 the stools were alkaline to litmus, and this was accompanied by excoriation of the buttocks. That the volatile fatty acids in the faeces are not dependent upon any one constituent of the food is evidenced by the irregularity in the quantity found during the experiments.

In the normal infant the amount of neutral fat in the faeces is very small—0.107 grams a day in the breast-fed infant and 0.179 gram in the bottle-fed infant. Most of this is fat that has escaped the action of the fat-splitting enzymes by being entangled in proteid curds—so-called fat curds on analysis were found to contain only 20 per cent. of fat.

In Experiment No. 1 the iodine number for the fat in the faeces was 67, or slightly above the iodine number for the fat of human milk. In Experiment No. 7 the number was 41, about the average of butter fat. In Experiments 3 and 4 the number rose to 62, indicating a change in the character of the fat excreted when the infant was on a low fat diet. In Experiments 5 and 6 the iodine number was 75, which would be accounted for by the increase of olein in the food.

The free fatty acids exceeded the amount of fat found in the faeces in every experiment where the fat in the food was over 0.5 per cent. Free fatty acids were found in alkaline stools in Experiments 2, 3, 4, and 6, confirming Pflüger's experiments that free fatty acids combine very slowly at 37° C. with weak alkalies. The fatty acids present as

TABLE I.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-purgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
									c.cm.					
1	338	6.72	—	3.112	10.53	0.330	10.20	1	—	0.106	0.095	0.025	3,170	—
2	279	7.00	—	2.765	7.71	0.120	7.59	1	—	0.124	0.103	0.186	3,190	20
3	290	6.89	—	3.475	10.07	0.948	9.13	2	15.5	0.103	0.389	0.133	3,185	- 5
4	304	6.92	—	3.324	9.99	—	9.99	0	—	—	—	-	3,170	-15
5	341	6.71	—	3.281	11.20	0.278	10.93	2	16.3	0.109	0.654	0.054	3,170	—
6	365	6.81	—	3.274	11.97	0.380	11.59	3	17.8	0.196	0.491	0.137	3,160	-10
7	344	6.50	—	3.262	11.23	0.071	11.16	1	17.7	0.110	0.391	0.095	3,230	70
	2,261	—	—	—	72.70	2.127	70.59	—	—	0.748	2.123	0.630	-	60

TABLE II.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-purgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
									c.cm. 7.5					
1	556	—	—	—	12.89	0.0	12.89	2	—	0.230	0.228	—	—	-
2	476	5.25	0.967	2.32	11.04	0.0	11.04	4	6.9	0.129	0.383	3.23	5,414	+113
	1,032	—	—	—	23.93	—	23.93	—	—	0.359	0.611	3.23	—	—

TABLE III.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Proteid in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-purgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
1	603	4.26	0.893	0.176	1.06	0.0	1.06	4	c.cm. 10.2	0.129	0.013	0.411	5,443	+ 29
2	599	4.49	0.911	0.176	1.05	0.0	1.05	6	15.1	0.154	0.020	0.486	5,216	−227
	1,202	—	—	—	2.11		2.11	10	—	0.283	0.033	0.897	—	−198

TABLE IV.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Proteid in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-purgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
	721	7.33	0.928	0.193	1.39	0.0	1.39	5	c.cm. 10.7	0.074	0.006	0.230	5,128	—

TABLE V.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-suspiciated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
									c.cm.					
1	717	7.75	0.946	0.525	3.76	0.0	3.76	3	11.1	0.055	0.018	0.127	5,059	—
2	705	8.29	0.911	0.496	3.49	0.0	3.49	4	27.8	0.247	0.408	0.012	5,202	143
	—	—	—	—	—	—	—	3	—	0.079	0.069	0.096	5,128	-74
	1,422	—	—	—	7.25	—	7.25	10	—	0.381	0.495	0.265	—	—

TABLE VI.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-suspiciated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
									c.cm.					
10	716	6.74	0.839	0.516	3.70	—	3.70	5	13.3	0.100	0.334	0.251	5,100	-28
11	718	6.68	0.839	1.020	7.30	—	7.30	4	14.2	0.323	0.411	0.267	5,086	-14
—	1,432	—	—	—	11.00	—	11.00	—	27.5	0.429	0.745	0.518	—	-42

TABLE VII.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Proteid in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-egurgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
									c.cm.					
1	320	6.85	1.14	1.97	6.30	0.047	6.25	3	0.0	0.113	0.432	0.278	3,203	+14
2	502	6.25	—	2.36	11.84	0.195	11.64	2	2.5	0.015	0.057	0.228	3,231	+28
3	445	7.29	1.29	2.10	9.34	0.700	8.64	2	0.0	0.447	2.956	1.395	3,260	+29
4	463	5.37	—	2.09	9.67	0.172	9.50	2	9.7	0.165	0.315	0.789	3,288	+28
5	473	7.93	—	2.85	13.48	0.000	13.48	4	37.4	0.496	4.041	1.570	3,302	+14
6	444	5.99	1.21	2.81	12.47	0.410	12.06	5	35.9	0.577	4.789	0.867	3,302	—
—	—	—	—	—	—	—	—	3	20.4	0.219	1.906	0.034	—	—
—	2,637	—	—	—	63.10	1.524	61.57	21	—	2.062	14.496	5.161	—	113

soaps averaged 0.07 gram in the breast-fed infant and 0.161 gram in the normal infant on artificial food.

In Experiments 3 and 4, when the fat was reduced to 0.176 per cent., the soaps increased (for Experiment 3) to 0.448 gram, (for Experiment 4) to 0.230 gram, Halliburton, Gamgee, and others found the calcium and magnesium soaps in excess of the soluble soaps in the fæces; and Uffelman found more calcium in the fæces of artificially-fed infants with diarrhoea than in healthy sucklings.

From our experiments we see that the soaps are increased in the faeces in artificially-fed infants, and in infants with a low percentage of fat in the food (Tables III and IV), and in infants with diarrhoea (Table VII).

Have we not grounds for believing, therefore, that the loss of calcium, in combination with the fatty acids as soaps, would be increased under these conditions?

TABLE VIII.—*Percentage Relation to Intake.*

Experiment.	I.	II.	III.	IV.	V.	VI.	VII.
Total intake of fat	70.59	23.93	2.11	1.39	7.25	11.00	61.57
Percentage of fat in faeces	1.06	1.50	13.41	5.32	5.25	3.90	3.34
Percentage of fatty acid in faeces	3.00	2.55	1.56	0.43	6.82	6.77	23.54
Percentage of fatty acid as soap in faeces	0.80	1.35	42.51	16.54	3.65	4.70	10.00
Total fats	4.95	5.43	57.48	22.30	15.73	15.38	36.88

Proprietary foods with very low fat percentages are acknowledged as one of the etiological factors in the production of rickets.

Pflüger found in his experiments on the solubility of fatty acids that the solid fatty acids, palmitic and stearic, were much more readily saponified if dissolved in oleic acid. And although these acids were saponified readily oleic was only acted upon to a very slight extent.

We determined the iodine numbers for the free fatty acids and for the fatty acids combined as soaps. The iodine number for the free fatty acids was 77 to 79, for fatty acids combined as soaps 51 to 62, showing that the fatty acids combined as soaps contained less oleic acid than the free fatty acids.

In Experiment 7, with pathological conditions present, the iodine number for the fatty acids combined as soaps was 84, the free fatty acids 37. Here the conditions were apparently reversed.

Conclusions: About 4 per cent. in nurslings and 5 per cent. in bottle-fed infants of the fat ingested appears in the fæces.

The fat found in the fæces is, to a great extent, fat that has escaped digestion.

The fatty compounds in the fæces exists as neutral fat, fatty acids, and soaps. The fatty acids are usually in excess of the other two constituents.

The soaps are relatively increased in artificially-fed infants, in infants with a low percentage of fat in the food, and in infants with diarrhœa.

In conclusion we wish to thank Professor R. F. Ruttan for the use of his private laboratory, Dr. J. R. Roebuck for his kind assistance, and Drs. Blackader, J. C. Cameron, and Evans for the use of the material in the hospitals.

Bibliography

Pawlow, *The Work of the Digestive Glands*, 1902. Cannon, *American Journal of Physiology*, vol. xii., No. 4, p. 337, 1904. J. P. Sedgwick, *Archives of Pediatrics*, June, 1906. Pflüger, *Archiv fur Physiologic*, Plüger, 86, 1901. Moor, *Proceedings Royal Society of London*, lxii. Hauriot, *Comp. rend. Soc. Biol.*, 1901, p. 70. Munk, *Archiv fur Physiologie*, Supplement, 1890, p. 107. Loevenhart, *American Journal of Physiology*, 1902, p. 331. Halliburton, *Textbook of Physiology*. Moor and Rockwood, *Journal of Physiology*, vol. xxi, page 58. Hoppe-Seyler, *Zeit. Physiol. Chem.*, viii, 503. Oskar Klotz, *Journal of Experimental Medicine*, vii, 6, 1905. Rachford, *Journal of Physiology*, 1891, xii, p. 72. Corlette, *Journal of Physiology*, 1900, xxv, 5. Otto Frank, *Zeitschrift fur Biologie*, xxxiv. Leach, *Food Inspection and Analysis*. Allan, *Commercial Organic Analysis*. Uffelman, *Jahresbericht der gesammten Med.*, 1882, xvi, 387. Gamgee, *Physiological Chemistry*.

TETANUS FOLLOWING VACCINATION.

BY

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M. F., aged 5 years was vaccinated on 7th of September 1906 with surgical precautions. The abrasion made on the arm was covered with a piece of sterile gauze held in place by narrow strips of zinc-oxide adhesive plaster; the gauze was removed in seven or eight days by the mother, after which the arm received the ordinary care and protection. All went well until September 26th, nineteen days after vaccination, when the child passed a wakeful night, had difficulty in opening the mouth, and in swallowing. Several times during the night he had had peculiar attacks. He was said to have cried, and to have straightened out, the body and limbs becoming rigid.

Read before the Montreal Medico-Chirurgical Society, November 2nd, 1906.

I was called to see the patient at 2.30 P.M., September 27th, shortly after one of these convulsive seizures. He was resting quietly in his mother's arms, the pulse slightly quickened, the temperature normal. The muscles of the extremities, body and neck were somewhat rigid, and apparently both sides of the body were equally involved. He cried on any attempt being made to move him, or to bend his arms or legs. He could protrude the tongue only partially, and with difficulty, from inability to open the jaws; there was also some difficulty in swallowing.

When he was placed upon the floor he was able to walk, but in a stiff and jerky manner; the head and neck and trunk were held decidedly fixed, and he did not appear to have proper control over his limbs. The vaccination ulcer on the left arm was a round, punched-out sore, extending through the entire thickness of the true skin, and in size rather larger than a sixpence; its base was covered with a sero-purulent secretion and there was swelling, redness and induration of the surrounding skin. It was not in any way an unusual or an unhealthy looking vaccination sore. Scattered generally over the body, particularly over the legs and arms, numerous blotches and scratches were to be seen, evidently a traumatic rash, said to be due to mosquito bites and to scratching.

September 28th, 9.30 A.M. Dr. Archibald kindly saw the case in consultation. The patient had had a bad night; all the symptoms observed yesterday, the trismus, the dysphagia and the general muscular rigidity were now more marked, and during the night the patient had had several general convulsions, when the limbs were forcibly extended in tonic muscular spasm, and the body held in opisthotonos. The case was now considered to be clearly one of tetanus, and the child was removed to the Western Hospital for surgical treatment.

Dr. W. F. Hamilton saw the case in the afternoon in consultation, and concurred in the diagnosis. At 4.30 P.M. under general anaesthesia the ulcer was excised by an eliptical incision carried down to the fascia muscle; ten c.c. of anti-tetanic serum was injected into the surrounding tissues, and the wound was closed by interrupted sutures. The brachial plexus on the left side was then exposed and a drachm and a half of anti-tetanic serum was injected into the three cords of the plexus, enough to swell the nerves to three times their natural size. Four cc. of serum was also injected between the second and third lumbar vertebrae into the spinal cord or subarachnoid space. The needle was moved about in the spinal canal with the view of injuring the cord, but failed to cause any twitching of the legs. Five c.c. of serum was also given subcutaneously. The patient left the operating room in

good condition and came out of the anaesthetic quietly. At 8 P.M. pulse was 120, temperature 100° F. patient resting comfortably and taking liquids (milk and water), though at times there is some difficulty in swallowing.

September 29th, 4 A.M.—Pulse 120, temperature 100½° F.

5 A.M.—slight convulsion.

8 A.M.—pulse 132, temperature 105⅕° F. perspiring very freely, mouth twitching, swallowing improved. Chloral hydrate and potassium bromide of each 2½ grs. given.

10 A.M.—Patient does not seem so well. The face has an anxious expression, the legs are extended and stiff, the left being more rigid than the right, the arms are flaccid; the neck is stiff and the head retracted, in which he complains of recurrent spasmodic pains; the mouth and facial muscles twitch (*risus sardonicus*), the body is seen to jerk every few minutes, accompanied by short moans caused by recurring pain referred to the episgastric region.

11.30 A.M.—Slight convulsions lasting about a minute.

Termination at 6 P.M. a severe general convulsion occurred involving the whole muscular system. The legs became perfectly rigid and the arms also but to a less degree; the breathing became rapid, cyanosis soon supervened and finally respiration failed. The heart continued to beat after the respiration had ceased.

Remarks:—This case seemed a favourable one for surgical treatment. It came to operation less than 48 hours after the onset of symptoms; the temperature before the operation was low, not above 100° F. and the child's general condition was good. The treatment was certainly radical; the result disappointing and discouraging. Whether the treatment had any beneficial affect in lessening the severity of the spasms it is difficult to say. It was thought that swallowing was easier, and the trismus less marked. It is perhaps to be regretted that a full dose of the serum was not given subcutaneously at the earliest possible moment, that is, 24 hours before the operation.

The time has come when vaccination can no longer be considered a simple matter, a slight operation, which any one may perform, and requires no special treatment. I hope there may be some discussion on the subject of vaccination and especially on the proper method of treating the ulcer or so-called pock. So far as I know there has been up to the present time no recognised or uniform method of treatment in these cases. They are generally left untreated or to receive such treatment as may seem good to the patient. In view of the bacteriological report it is impossible to say definitely how the tetanus toxine gained

entrance into the system, whether through the vaccination sore or some other focus, such as one or more of the numerous cutaneous abrasions.

I wish to express my indebtedness to Dr. Archibald for his assistance at the operation, and to Dr. Keenan, and to the Resident Hospital Staff for their attention to the patient, while he was in the Hospital, and for notes of the case.

With regard to the purity of the vaccine, Dr. Keenan made a very thorough bacteriological examination of several tubes of vaccine taken from the same lot of lymph as that used to vaccinate this child, with a negative result. He also examined the excised ulcer, and made several inoculation experiments; but again failed to find either the toxine or the bacillus of tetanus. It is impossible, therefore, to say that this particular case of tetanus occurred as a result of vaccination.

The numerous abrasions scattered widely over the child's body, caused by mosquito bites and subsequent scratching, were quite sufficient to have been the infecting focus in this case.

The case, however, teaches the importance of vaccination, and the care which should always be taken in the after treatment to guard against infection. Dr. Evans's practice of protecting the arm by sewing a piece of sterile gauze inside the sleeve, and bathing the arm daily with alcohol has much to recommend it, and I have practically followed this plan for years, and have never allowed my patients to wear patent shields as protectors.

In cases where secondary infection has occurred, and as a result a foul ulcer exists, it should be treated on general surgical principles, to obtain an aseptic sore as soon as possible.

(In reply to Dr. Garrow's question): The wound was sutured after the ulcer was excised; the bronchial plexus was left exposed with sutures surrounding the three cords to facilitate the further injection of serum, if it were thought necessary. After the operation the child showed some signs of improvement, but within twenty-four hours a severe convulsion occurred from which he died before a second injection could be given.

In Dr. Archibald's excellent paper on tetanus, read last year before this Society, it was shown that the toxine of tetanus gained entrance to the spinal cord and medulla through absorption by the axis cylinders of the nerves, and not through the general circulation. It was his paper which determined me to carry out the operative treatment therein advised.

Dr. Horatio C. Wood has resigned the chair of materia medica, pharmacy, and general therapeutics in the University of Pennsylvania on account of ill health, and has been elected emeritus professor.

TETANUS FOLLOWED BY RECOVERY.

BY

ALISON CUMMING, M.D.

Royal Victoria Hospital, Montreal.

The following case report is submitted as a contribution to the literature on the treatment of Tetanus by the intra-neural and intra-mural injections of Anti-toxine.

C. S. aged 5, on July 18th, 1906 fell on a sharpened stick with bark on it, which lay on the ground. The stick entered his left thigh on the inner side 2½ inches above the knee. It ran up the thigh 5 inches, as was afterwards observed on examination, superficial to the muscles, and then penetrated the muscle to the region of the femoral vessels. In the evening the wound was opened for a short distance and washed with saline and hydrogen peroxide. Some bark; a little earth, and a piece of cloth were removed from it. It was afterwards packed with iodoform gauze, and dressed with a dry dressing.

On July 21st, 3rd day, the patient was seen again. His leg was sore and swollen and his temperature 100°. The packing was removed; no pus was found; hot fomentations were applied.

On July 22nd, 5th day, there was a trace of pus in the wound. Temperature was normal.

On July 25th, 8th day, the patient felt better, and tried to get up; but he noticed that his left leg jerked upwards and became flexed on his abdomen. This movement was accompanied by considerable pain.

Next day the family physician saw him again. When touched, the muscles of the patient's leg became rigid. This was accompanied by spasm of the lumbar muscles as well. He was taken immediately to the hospital and while on the train the spasms became frequent and more severe.

Examination in Hospital July 27, 1906, 9.15 P.M., 9th day of disease.

Child was lying on his right side. Head markedly drawn back-back—in the opisthotonos position. Left thigh flexed on abdomen, and leg slightly flexed at the knee. The spasms were frequent, and occurred on slight excitation such as a mere touch. At the onset of each spasm he assumed an expression of anxiety and distress accompanied by a cry of pain. The effect was most marked on the left lower extremity; but the muscles of the other limbs, the back and neck and occasionally the recti abdominalis also participated in the spasm. The erectors spinæ were especially rigid. The masseters were involved slightly. He could open his mouth to such an extent that the index

finger could be inserted between his teeth. The spasms came on at one to two minute intervals, and lasted about 30 seconds. Temperature 100⅘, Pulse 138, Respirations 28.

Operation— The same night the wound was opened in its whole extent, an incision about 8 inches long being made. The walls were dirty and contained a few drops of pus and a number of small pieces of bark. The walls were excised with a knife. The anterior crural nerve was then exposed, and injected with a hypodermic syringe full of anti-tetanic serum; and the balance of the 10cc. was injected into the soft tissues in the upper part of the leg wound. The great sciatic nerve was then exposed, and treated similarly. Five cc. of the serum was then injected into the spinal canal between the 1st and 2nd lumbar vertebrae, an effort being made to injure the cauda equina by working the needle about. No twitching of the legs was noticed. The remaining 5 cc. was injected into the soft tissues of the loin.

After operation— Up to 7 A.M. on the day following operation the spasms were very severe, occurring about every seven to ten minutes and lasting on an average half a minute. They were of the same character as those noted before operation, except that they were more severe, and were accompanied by more rigidity and pain. Between 7 and 10.30, A.M. July 28th, the spasms became less frequent and less violent, and were confined mainly to the extensor muscles of the injured leg, the flexor nature of the spasm observed at first having given place to complete extensor spasm of the whole leg.

At 10.30 A.M. under an anæsthetic half a drachm of anti-tetanic serum was injected into the spinal canal between the 1st and 2nd lumbar vertebrae; and a corresponding quantity subcutaneously. The subcutaneous injection was repeated at 5.30 P.M.

During the evening the patient was very restless and was subjected to attacks of spasm of the muscles of the neck, back and extremities. These came on about every 20 or 30 minutes but were not so violent or painful as before. He lay by preference on his abdomen in order to allow for the hyperextension of the thigh on the pelvis; and when a spasm was on, his limbs were held straight and rigid, only the dorsum of his feet and his thorax touching the bed.

At 11.15 the same night an anæsthetic was again administered and the same treatment was carried out. On this occasion the intra spinal injection was made between the 11th and 12th dorsal vertebrae, and on moving the needle about within the canal, definite twitchings of the legs were observed.

On the following day, July 29th, this was repeated. After this his condition improved somewhat and for the two succeeding days he re-

mained about the same. He lay in a half opisthotonos position, while the rigidity of his back and neck muscles was easily overcome. On each of these days he had subcutaneous injections of the serum. His temperature during this time varied between 102° to 103⅖.

On August 3rd, in addition to the intra-neural intra-spinal injections the local wound was opened up and a small sinus was found running down between the artery and vein from which some small pieces of bark were removed.

From this time on he improved gradually, and on August 5th, 9 days after admission, his temperature was normal; and while his head was drawn slightly backwards and his back somewhat arched there was no evidence of marked rigidity or painful spasm.

The gradual improvement continued and on August 11th, when he left the hospital, fifteen days after admission, his muscles had regained their normal tone with the exception of his left leg which was still somewhat stiff and in a condition of tonic extensor spasm, and caused him considerable pain when actually flexed.

The tetanus bacillus was found in the tissue removed from the wound at the time of operation.

The case was thought by those who saw it to be one that would have gone to a fatal termination, if it had not been treated; because: there was a comparatively short incubation period. The symptoms appeared on the 8th day. 2. The temperature during the nine days before admission was comparatively high 99⅖ to 103.3. The spasms, though local at first soon became wide spread, involving the muscles mentioned. 4. The spasms were severe and frequent.

It seems reasonable to conclude that the results obtained were due to the treatment employed, because for the two days succeeding the commencement of treatment the symptoms remained stationary; and on the succeeding days the patient gradually improved.

The above notes are given through the kindness of Dr. Archibald under whose service the case was observed.

TETANUS FOLLOWED BY DEATH.

BY

A. E. Garrow M.D.
Montreal.

Since Dr. Archibald reviewed the literature of tetanus in this Society a year ago I have had to treat a case of acute tetanus. The patient, a girl nine years old, was sent to the Royal Victoria Hospital by Dr. W. Grant Stewart, to whom I am indebted for the accompanying notes.

On October 30th, 1905, the patient had her left shin bruised, and lacerated, by a cart wheel, while riding on the end of the vehicle. Dr. Stewart thoroughly cleansed the wound, and injected 5 c.c. anti-tetanic serum into and about the injury, and continued to dress it for two weeks during which time she remained in bed. The patient was then allowed to get up with what appeared to be a healthy granulating wound, and the parents continued the treatment themselves.

All apparently went well until Wednesday, December 13th, when she complained of weakness in her legs, a pain in the back, and a "sore" tongue. These symptoms persisted on Thursday, and that night her parents noticed that she was very restless in her sleep, although the following day she was unusually quiet. That afternoon she fell downshairs slightly injuring her head, and in the evening she staggered, and fell, several times on attempting to walk.

Dr. Stewart, who had not seen her for some days was again called on Saturday, and found a spastic condition of the lower limbs, retraction of the head, and stiffness in the back. In the afternoon she complained of pain, and stiffness, in the lower jaw. On Saturday night she wakened frequently with a start, and a cry, passing at once into a spasm with retracted head, arched back, and extended limbs.

She was admitted to the Royal Victoria Hospital on Sunday, December 17th, 48 days after the injury, and four days after the onset of general symptoms. The patient's face was flushed. There was retraction of the head; slight arching of the back; the legs and feet were extended, and more or less rigid. The jaws could be opened slightly with much difficulty; the tongue was coated, and the pupils dilated; the pulse 150, and weak.

From time to time she was thrown into general spasm, when she became cyanosed, and had difficulty in respiration. No urine had been passed for 36 hours, and a catheter withdrew but a small quantity of apparently normal urine.

The patient was anæsthetized with chloroform; the granulating, and slightly necrotic, tissue was freely excised. About 10 c.c. of serum was injected into and subcutaneously about this area; the surface was swabbed with a solution of iodine, and a moist antiseptic dressing was applied. The anterior crural, and sciatic, nerves were exposed and injected with from 7 to 8 c.c. of serum; the obturator was not exposed. The spinal canal was then tapped between the third and fourth lumbar vertebræ, about 7 c.c. of cerebro-spinal fluid was withdrawn, and a similar quantity of serum was injected. No twitching of the legs occurred during this proceeding, although the needle was moved about freely.

The patient recovered quickly from the anæsthetic, but the spasms returned, and recurred with increasing frequency, and were of longer duration. Chloral and bromide in solution were administered per rectum, but were promptly expelled. Twenty ounces of normal saline solution were given intravenously, but had only a temporary effect on the rapid and weak pulse. The patient succumbed from exhaustion within ten hours of the operation; the rectal temperature just before death was 107°F.

This case is of especial interest on account of the apparently long incubation period. Did the initial dose of antitoxine serum inhibit temporarily the growth of the organism inoculated 48 days before? There is no reason to believe that the wound was infected subsequent to the growth of granulation tissue. A long incubation period does not necessarily imply a subacute or mild form of tetanus.

Dr. Keenan found the tetanus bacillus in the necrotic tissue excised from the shin, but failed to produce tetanus in a guineapig which was injected with the cerebro-spinal fluid withdrawn by lumbar puncture.

PUBIOTOMY: CASE REPORT.

BY

DAVID JAMES EVANS, M.D.

Assistant Obstetric Physician Montreal Maternity Hospital.

E. M., aged 24, III—para, was admitted to the Montreal Maternity, September 8th, 1906. Her two previous pregnancies had been terminated at term by craniotomy. The last had taken place a year ago. This was followed by prolonged sepsis, and she was admitted to the General Hospital where she spent nearly a year. There she underwent an abdominal operation, one tube being removed.

The last menstrual period began January 1st, 1906. Patient first noticed foetal movements in May, 1906. There had been persistent nausea and vomiting throughout the pregnancy, and moderate severe frontal headaches. There had been oedema noticed at times, but no disturbance of vision. The bowels had moved regularly with cathartics. The patient stated that she had learned to walk at twenty-four months of age, and that she was married in 1903. Her previous pregnancies had gone to term the children being lost as above stated. There was no history of any previous disease. The kidneys were normal.

On examination the fundus uteri was found to be two finger-breadths below the ensiform cartilage. The abdomen was in the condition of a full term pregnancy. There was a scar of an incision in the middle

line half way between the symphysis and the umbilicus. The child was presenting in R.S.A., the presenting part being well above the brim. The foetal heart was heard from 144 to 156 on the right flank at the level of the umbilicus.

The pelvic measurements were Sp. 26.5 c.m.; Cr. 28 c.m.; Troch. 32. c.m.; Conj. Diag. 9 c.m.; the true conjugate was estimated at 8.5 c.m. The public arch was very wide, and the transverse diameter of the outlet was 12.75 c.m. A diagnosis of flat rachitic pelvis was made.

She had been seen in the Out-Door Department on August 29, 1906, and her measurements having been taken at that time, she was advised to come into the Hospital when the pains began, and it was the intention, if the condition warranted it, to deliver her by means of abdominal Caesarean section. In accordance with this plan she was put to bed when admitted, as she was having irregular abdominal pains, and small doses of morphia were given to secure rest.

On the night of September 10th, patient began to have frequent and severe pains. My attention was called to her on the morning of September 11th, when I had her removed to the labour room and prepared for examination. The position of the foetus was found unchanged by external examination, the foetal heart being heard in the same position, and at the same rapidity. On vaginal examination the parts were found relaxed. The vagina was short and there was nothing unusual about the vaginal discharge. The sacral cavity was markedly accentuated from above downwards, and decreased laterally. The promontory could easily be reached by the finger. The os was found three-quarters dilated, and the left hand of the foetus prolapsed into the vagina. The foetal breech was felt above the internal os in R.S.A. position.

No record could be obtained as to when the membranes had ruptured. Under the circumstances I decided that to deliver the patient by the abdominal route would necessitate a Porro operation, so I decided to attempt delivery by means of pubiotomy.

The patient having been prepared for operation in the usual method, she was catheterized in the dorsal position, and the catheter was allowed to remain in the urethra as a guide. A short incision was made parallel to the upper border of the left ramus of the pubes, down to the bone. The finger was inserted behind the symphysis stripping off the bladder, and a Bumm-Stockel needle was then passed carefully down behind the symphysis, guided by the internal finger, and brought out midway on the left labium majus. A Gigli saw was then attached to the needle and drawn back through the wound. The bone was sawn through exceedingly easily, but it did not separate with any sudden snap. Just

as the bone had been sawn through there was a gush of blood which was readily checked by pressure from gauze packed into the wound and over the pubes. The legs were now flexed and held in position by assistants.

Dr. Little who was assisting me undertook the delivery. The right foot of the child was seized and brought down, and the body as far as the umbilicus delivered without difficulty. The right arm was found to be displaced upwards, and around the child's neck, and it was removed without much difficulty, but the child could not be turned to allow the biparietal diameter to come down on the left side, as is directed in such cases. Some considerable force was necessary to bring the head down into the pelvis: as it passed the brim the pelvic bones separated to the extent of 2 c.m.

The child was deeply asphyxiated on delivery, but was resuscitated with hot and cold baths and insufflation. After the birth of the placenta which was expressed without difficulty the patient was examined internally. A deep tear was found extending high up into the uterine segment on the left side, as it did not bleed it was decided not to suture. The skin incision was then closed with four silk-worm sutures, the lower wound being covered with iodoform collodion. The pelvis was surrounded by a broad strip of adhesive plaster, and sand bags applied along either side. A small band was placed about the knees of the patient to keep them together. After operation the patient's pulse was very weak but soon after being put to bed it became about 116 per minute. She was given a saline solution of 700 c.c.

About three-quarters of an hour afterwards the patient showed evidence of collapse, the lips and finger nails becoming deeply cyanosed. There was no definite sign of hæmorrhage, nor was there marked abdominal tenderness, though the pulse rose to 144 per minute. Under prompt treatment she rallied.

The child was a male and weighed 2600 grammes. The Bi. P. diameter was 8.75 c.m.; Bi. T. 8 c.m.; O. M. and the O. F. 11.5 c.m. The further history of the child was uneventful. It weighed when it left the Hospital 2670 grammes. The mother was unable to nurse the child, and it was fed on a cream and whey preparation.

The recovery of the patient was on the whole uneventful. The highest temperature recorded was 101.5 which was reached on the 5th day. As a rule the temperature remained below 100. The patient required to be catheterized but twice, when she regained complete control of the bladder. She complained of considerable pain over the right sacro-iliac-synchondrosis throughout.

The incision was dressed on the 6th day and every thing was found in good condition. There was marked swelling and induration of the left labium. On the 11th day dressings were removed, the wound was dressed and the sutures removed. A quantity of peculiar blood stained fluid escaped from the outer edge of the wound at this time, and more could be expressed by pressure. This sinus was somewhat enlarged by a probe, a sterile gauze drain was inserted, and the wound was dressed every day or two until this discharge ceased.

The patient was a very sensitive and rather complaining type of woman, and very apprehensive about beginning movements of her limbs. She sat up for the first time on the 30th day and was discharged on the 47th day. She was detained longer than necessary in the Hospital in order to permit of certain examinations being made. On discharge the pelvic examination showed the cervix lacerated on the left side. The uterus was well involuted, not tender, and in good position. The adnexa were free. The Diag. Conj. twice measured 9.25 c.m. showing a slight permanent increase. The left ramus of the pubes was markedly thickened in its entire extent, but there was no definite callous noticed at the line of division. The genitalia were practically in the same condition as when the patient was admitted. The patient could stand on either leg without difficulty, and there was no evidence of undue movement in the pelvis.

This operation was first suggested by Gigli, in 1894, his object being to retain all the advantages, and do away with some of the dangerous features of the operation of symphysiotomy. He proposed that the pubic bone should be sawn through to one side of the symphysis by means of a fine wire saw which he had designed for the purpose, since known as the Gigli saw. The operation was first performed by Bonardi of Lugano, in May 1897. The operation was first introduced into Germany by Doederlein in 1904, who largely improved the technique. Since then the operation has been done in practically all the German Clinics, and in France. The operation has been steadily growing in favour and the results have on the whole been very satisfactory. It has been performed many times in the United States, and once in Canada by Laurendeau of St. Gabriel de Brandon, who reports a case in *La Union Medicale du Canada*. Jan. 1906.

As has been suggested by Gigli the operation consists in making a large vertical incision to one side of the symphysis pubis, and then sawing through the bone from the outside. Doederlein's modification has made the operation practically a subcutaneous one. The operation performed in the case here reported is practically that of Doederlein.

Bill in a recent paper on this subject to which I am much indebted claims the following advantages of the operation over Cæsarean section:

(1) The fact that the peritoneal cavity is not opened, and that the field of operation does not connect with the generative tract, allows of its being done in cases in which there is infection already present, or where there is a suspicion of infection on account of examination under doubtful asepsis.

(2) The greater simplicity allows of its being done in a private house, and the fact that it may be done subcutaneously greatly lessens the danger of infection.

(3) The operation includes nothing which might interfere with future labours. The uterine wall is not incised, and this decreases the danger of weakening it.

The complications which attend the operation are according to reports hitherto published, hematomata of the labia, and at the site of the operation; lacerations of the bladder and of the vagina wall, which in some cases connect with the field of operation; and thrombosis of the veins of the leg.

Bill has been able to collect records of 157 cases in which the operation has been performed, with eight deaths. There is no doubt that many other operations have been performed which have not been recorded. In but one of these fatal cases could the death be said to have resulted from the operation, and the cause of death in this was thrombosis and embolism. Several of the other cases died of sepsis, but in each one of them sepsis was present at the time of operation. One case died of chloroform during the operation, and another of typhoid fever twenty-five days after operation. The results for the child have not been so uniformily good as for the mother, but on the whole could be said to be very satisfactory.

The increase in the true conjugate which may be obtained, depends upon the degree of separation of the cut ends of the bone. A separation of 6 c.m. between the cut ends of the bones will give an increase in the true conjugate of 2 c.m. This degree of separation of the cut ends of the bones has as yet not been recorded. The maximum of separation Doederlein records is 5 c.m., which was not attended with any injury to the soft parts. The operation is limited in flat rachitic pelves to 7 c.m. C. V. and in general contraction to 7½ c.m. C.V.

The enlargement as a result of the operation is an asymmetrical one. The pelvic diameter on the side opposite to the incision is as a rule most markedly increased.

Bills reports having been unable to record a single case where the bony surfaces did not unite after the operation; as a rule there is no mobil-

ity and in no case is there any record of the patient being affected as a result of the operation. Some observers have reported the presence of callous in considerable quantity after the operation. Van des Vale and Kannegiesser have reported cases in which pubiotomy had been performed, and at a subsequent labour there had been spontaneous delivery, the enlargement of the pelvis evidently being permanent.

My own opinion is that the operation has a distinct, though limited, field, and on the whole I am satisfied with the technique of the operation as performed in this case. The hæmorrhage which may be moderately severe was, in nearly every case recorded, easily checked by pressure, and arises chiefly from the crura cavernosus clitoridis, and usually comes at the moment of separation of the bone. The saw should be used through as wide an arch as possible to avoid bending, and so breaking it, and it should not be removed until perfectly satisfied that the bones have been completely severed. Drainage if required at all should be done from the upper wound.

CONGENITAL DISLOCATION OF THE HUMERUS.

BY

A. Mackenzie Forbes, M.D., E. Hamilton White, M.D., and Colin H. Russel, M.D.
Montreal.

Dr White: The patient, C. T., age 9 months, came under my observation 27th August, 1906, at Little Metis, P.Q. At that time advice was sought on account of a troublesome diarrhœa which had become so severe as to alarm the parents. Incidentally, I was asked to examine the child's arm, which they said had been deformed since birth. The physician who had been in charge at the birth had been consulted on several occasions, but had told the parents that the arm was paralyzed and that nothing could be done for it.

The child was poorly nourished, having been weaned early and fed on milk and water without any special attention to proportions. There was a striking deformity of the right shoulder, but the arm itself showed no marked deformity, and the child could apparently move its hand and forearm. The head of the right humerus was found displaced backward on to the scapula lying in the infraspinous fossa firmly fixed. No other abnormality was made out at the time.

The parents were both healthy and well formed. The mother had an older child, which was healthy. No particulars could be obtained

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as to the labour, but the child had evidently been partly asphyxiated at birth. It would seem probable that it was in delivery, or during the manipulations to establish respiration that dislocation had occurred. The child's poor physical condition from the prolonged gastro-enteritis did not warrant any immediate attempt at reduction.

Dr. Russel: C. T., aged 9 months. Examination made on October 29th and November 1st, 1906. The arm is held in the position of pronation, the elbow being slightly flexed. The fingers also are flexed. The right shoulder is smaller than the left, and there are several deep transverse folds between the neck and shoulder. There is some contracture of the biceps, so that the arm cannot be perfectly straightened at the elbow. The shoulder can be elevated, but protraction and retraction are very limited; abduction is impossible. At the elbow extension is good; flexion is practically absent; supination of the forearm is impossible.

The wrist can be extended, and flexed, perfectly. Extension of the fingers is impossible, the action of the interossei (extension of distal phalanges when proximal ones are semi-flexed) is not impaired. Long flexors of fingers and all the small muscles of the thumb and hand are normal.

Electrical Reactions: In the left arm these are normal. In the right arm the following muscles do not react to Faradism: rhomboids (doubtful), supra and infraspinatous, latisimus dorsi and pectoralis major, deltoid, biceps, supinator longus, extensor communis digitorum.

The following react well to Faradism: Trapezius, biceps flexors of the wrist and fingers, and all the small muscles of the hand.

The paralyzed muscles, with the exception of the extensor communis digitorum, are supplied by the 5th and 6th cervical segments. The extensor communis digitorum is usually looked upon as obtaining its supply from the 7th or even the 8th cervical segment through the musculo-spiral nerve. As no other muscles supplied by these segments is affected the case seems to be one of the so-called obstetrical palsies, with probably a lesion of the peripheral part of the musculo-spiral nerve in addition.

Dr. Mackenzie Forbes: The patient whom we have before us to-night was referred to the Children's Hospital by Dr. Hamilton White, who has already read the history of the case. The child was admitted into the wards of the hospital on the 12th September last, suffering from a severe attack of chronic diarrhœa, and it was because of this that nothing for the relief of the deformity, about to be considered, has been as yet attempted. The patient is now nearly nine months of age.

On admission the following facts were noted: The child is poorly nourished. The shape of the head suggests trauma at birth, or congenital deformity; but the history is of the former; the mother having had a long and difficult labour, forceps, at last, having been used.

The right arm is held in an abducted and slightly flexed position. The forearm is acutely flexed. The humerus is internally rotated. The internal condyle of the humerus points backwards. The olecranon process of the ulna points outwards. The pectoralis major is relatively markedly contracted. The deltoid is slightly atrophied. The child's guardians say that the patient is able to both flex and extend the hand. The head of the humerus is felt as a globular prominence underneath the spine of the scapula near its acromial extremity, and is freely moveable with the shaft of the humerus. There does not appear to be any marked abnormality in the scapula. The left arm is slightly longer than the right, but there is no marked difference in the length of the separate bones. The lower extremities seem to be normal. There is a slight umbilical hernia. The left ear is hardly normal.

As Dr. Russel will demonstrate these deformities are accompanied, and perhaps partly accounted for, by paralysis of the group of muscles shown by Erb to be supplied by the anterior divisions of the 5th and 6th cervical nerves, which, under such conditions, is usually attributable to injury at birth.

The Congenital Dislocations of the Humerus may be divided into three classes: (1) True congenital misplacement; (2) dislocation caused by violence at birth; (3) acquired subluxation, due to injury to the brachial plexus.

Although dislocation by traumatism, such as torsion or traction, at the time of birth has been demonstrated to be anatomically less likely than fracture or separation of an epiphysis, we must consider whether the dislocation in the patient now before us was prenatal, was caused at the same time as the injury to the nerves of the brachial plexus, which is the cause of the extensive paralyses of the muscles about to be described, or whether it followed this injury and depended upon it.

True congenital or prenatal misplacement is extremely rare. On examining the available literature on this subject it seems that not more than twenty-five references have been published since the earliest times. On examining these references we find that very few of those reporting such deformities have been able to do more than suggest their prenatal origin. There have been but few post-mortem examinations made and few open operations performed for the reduction of this

dislocation. Scudder of Boston has mentioned that a difference in the measurements of the bones composing the upper extremity would suggest such origin, but it seems that accompanying paralyses might be considered sufficient to account for any moderate difference as seen in this patient. Congenital deformities accompanying a dislocation at the shoulder, as are suggested in this case, would also suggest a prenatal origin, but the extensive paralysis of the muscle surrounding the joint is, in itself, a sufficient cause for the deformity described.

A displacement of the humerus even when secondary to injury to the brachial plexus is usually of greater importance than the paralysis, since it prevents functional use, and is thus in a greater degree accountable for the loss of growth, and the comparative uselessness of the extremity.

The first indication in the case before us is to endeavour to reduce the deformity, as, until this is done, we cannot estimate the actual degree of irremediable injury to the nervous apparatus. This we shall endeavour to do, and I hope to be able to present favourable report at a later date.

PERFORATION OF THE STOMACH: OPERATION TEN HOURS LATER: RECOVERY.

BY

INGERSOLL OLMSTED, M.B.,
Surgeon to City Hospital, Hamilton.

The patient, J. F., a teamster, aged 40, was seen with Dr. A. G. Arnott of Hamilton, on 13th September, 1906.

History: He was always well until eight or ten years ago, when he began to be troubled with indigestion. He had distress two or three hours after meals; it was of a burning, dull character. A little food or soda would relieve the pain entirely. He never vomited, but occasionally belched up some bitter fluid. The attacks, at first, would last a week or two; but later they persisted longer. Purgatives would often relieve him. The bowels became irregular, and during the last four or five years, were constipated. He passed mucus with the stools since the beginning of the disease in large quantities and long ropy masses. Two years ago he went to the West where he gained in health, and weighed 205 lb. When there he was free from stomach trouble, but the mucus kept coming, though not so copious as before. When he returned, two years ago, he drank three glasses of whiskey

Read before the Hamilton Medical Society, Wednesday, October 3rd, 1906.

with friends, and the stomach began to trouble him at once, and has continued to do so ever since. At first he could eat any amount of food and feel better for it; but about a year ago he found he could not eat so much, as there was distress immediately after meals. He felt he must restrict his diet; he lost flesh, and now weighs 150 lb.

During the early history of his case he had dark tarry stools at times, but never vomited any blood. He passed some dark stools two weeks ago. The pain was felt in the pit of the stomach, and lately passed through to the centre of the back.

On the 13th of September he went to work, feeling as well as usual; but, when lifting a heavy package, he felt sudden pain across the upper part of the abdomen. He took off his load, rested for a time, and started to reload, but felt pain. He attempted again to put on a load, but had to give it up, and go home.

He went by car to his home, and at 11 a.m. sent for Dr. Arnott who found tenderness over the gall-bladder region, with slight rigidity. Hot applications were applied and small doses of acetanalid ordered. In the afternoon he had severe pain, and Dr. Haist was quickly sent for. He gave a quarter of a grain of morphine. Dr. Arnott saw him again at 5 p.m., when he looked very ill, with tenderness over abdomen and rigidity at the upper part. I saw the patient at 6.30 p.m., when he was having a chill and rigour. There was board-like rigidity of the abdomen; temperature 100, pulse 80; could not palpate the abdomen on account of tenderness. He was ordered to the hospital, but before the ambulance arrived he demanded another hypodermic of morphia.

Under ether narcosis, a three inch incision was made through the right rectus. The gall bladder was found moderately distended with bile, spotted with flakes of lymph, but contained no stones. On feeling for the stomach there was an escape of flaky lymph and pus. Gauze was immediately packed in to take up the fluid; the incision was enlarged outwards, and wet compresses were placed outside of the soiled area. The field was then thoroughly exposed, and a stellate opening found in the anterior surface of the stomach midway between the two curvatures, and two inches from the pylorus. Around this opening there was a cicatrix and thickening, which showed that the ulceration had perforated through the floor of an old indurated ulcer. There was no evidence of any other ulcers either in the stomach or duodenum. This opening was closed with a series of mattrass sutures passed transversely to body axis, thus forming a vertical fold of the stomach. A careful peritoneal toilet was then made, without flushing, and a large gauze wick passed through a stab wound in the right loin, to drain

Morrison's pouch; the colon was then drawn up to protect the suture line, and the anterior abdominal wound was closed. The patient was placed in bed in a semi-sitting position, and a continuous saline injection was given by the bowel, after the manner advised by Murphy. The following day the patient looked, and felt, well. There was considerable drainage from the loin, and slight distension of the lower part of the abdomen. The pulse was 98, and temperature 100½.

The subsequent history was uneventful, except for an infection of the abdominal wound.

He was allowed water by the mouth on the third day, and food on the sixth. Drainage was removed from the loin on the eighth day. Bowels acted naturally, and the mucus decreased rapidly from the stools.

This case is of interest in many respects. He never had any vomiting. The pain at first was two or three hours after meals, and was relieved by food or alkalies, but later the pain was felt shortly after a meal. At certain times his appetite was excellent, and he could eat a large quantity of food, but during the last two years he has been compelled to limit the quantity of food.

The presence of mucus in the stools, is an unusual symptom. It more frequently follows irritation from appendicitis, and it is not improbable that the appendix may have been inflamed in this case. We do know, however, that mucus has almost ceased to be passed, and this supports the view that the stomach was primarily at fault.

The presence of tarry stools should always suggest ulceration. The presence of occult blood should always be sought for, yet one must not forget that it may be present in functional nervous disorders without ulceration.

The position of the ulcer is also unusual. The majority of gastric ulcers are situated at the pylorus, posterior surface, or on the lesser curvature near the pylorus, and extending down on both the anterior and posterior surfaces, the so-called saddle ulcer. In this case the ulcer was at the base of the antrum on the anterior surface, and thus in the grinding portion of the stomach.

It is interesting that all the symptoms disappeared after the infolding of the ulcerated area. The symptoms of perforation are characteristic of this grave condition: namely, sudden pain in the stomach, followed by more or less collapse and rigidity; as the condition advances the abdomen becomes board-like, and occasionally is followed by chills and a rigour. The pain is difficult to control by morphia. The liver dulness may or may not be absent.

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THE OPERATION OF PUBIOTOMY.

Since the memorable lecture at the Clinique Baudelocque on the 7th December, 1891, when Pinard reintroduced symphysiotomy into France, the fortunes of that operation have waxed and waned. Heralded as the coming conservative operation which would displace craniotomy upon the living child, and in most cases replace Cæsarean section, it was received with enthusiasm and practised extensively in Europe and America for a few years. Then, gradually, it fell into disfavour, and now is pratically dead, having been replaced by the improved Cæsarean section. In order to avoid the injuries to the urethra, bladder and soft parts, and the infection which frequently followed symphysiotomy, Gigli proposed to modify the operation by sawing through the pubic bone near the pubic spine. This operation, called pubiotomy or hebotomy, has been again modified by Döderlein,, Stœckel Bumm, Seeligmann and others, and is now being practised extensively in Europe and the United States.

The second case done in Canada, was reported by Dr. Evans at a recent meeting of the Medico-Chirurgical Society of Montreal, and a full report of the paper and discussion appears in this issue of the JOURNAL.

It seems that the new operation avoids some of the dangers and risks of the old symphysiotomy, and may be acepted as having a decided value in a certain limited class of cases. It does not pretend to compete with Cæsarean section for the *absolute* indication: and, furthermore, it has this great advantage that the technique is simple, and that it can be done with comparative safety at the patient's own home. It is thus easily within the reach of those who have little or no experience in abdominal surgery, or have not the advantage of the skilled assistance and care, which can be had only in a well equipped hospital. It can never wholly replace Cæsarean section even for the *relative* indication, although some of its enthusiastic advocates claim as much for it; it is to be hoped, therefore, that cases for operation will be selected with care, and that it will not suffer from the over zeal and enthusiasm of its friends.

Briefly, then, Pubiotomy is an alternative operation in flattened pelves where the true Conjugate measures 7 cm. or over; it is most suitable where the C. V. is between 8 and 9 cm.; and the nearer the C. V. approaches the limit of 7 cm., the less favourable will the operation be for the child. It must never be forgotten that pubiotomy, is essentially a child's operation, with the definite object of delivering a living child. When the flattening is so great that the child must be subjected to great compression during extraction, its chances will be greatly imperilled, and pubiotomy will be really less favourable for it than Cæsarean. Of course the amount of probable compression during extraction can not be estimated wholly by measuring the C. V.; the size of child must be taken into account as well, and an estimate made of the relative disproportion between the foetus and the canal through which it must pass. Where there is considerable disproportion, the maximum enlargement may be obtained by making the pubiotomy approach as nearly as possible the symphysis, and by making the incision parellel to the vertical line of the joint. The further the incision is made from the symphysis, and the more it diverges from the parallel, the less will be the separation between the cut ends of the bone, and therefore the less will be the gain in the length of the true conjugate.

The sub-cutaneous method which has been recommended by some operators has certain advantages but has disadvantages also, in that it favours hæmatoma, by allowing the collection of blood which is always effused in considerable quantity after the bone is sawn through. If one

small incision were made, the blood would drain away, and the risks and inconveniences of hæmorrhage would be avoided.

Probably the technique will still be modified and improved, and better results will be made possible, but there can be little doubt that the whole future of pubiotomy will depend more upon the care with which the cases are selected than upon refinements in the technique of the operation.

Another practical point was brought out in the discussion as the result of experience with the older operation; that the patient should be kept in bed for some weeks, until involution is complete, thus avoiding troublesome sequelæ such as subinvolution and displacements.

FOREIGN-BORN INSANE IN CANADA.

Ontario is determined to free itself from the burden of supporting the persons of feeble mind, who are being systematically deported to Canada. There are now four lunatics under the care of the inspector of asylums of Ontario, awaiting return to Sweden, and one to England.

By the census of 1901, the population of Canada was 5,371,315, the number of foreign-born being 699,500; the total of the insane was 16,622, and of these 2,878 were foreigners. From these returns it will be seen that a little over thirteen per cent. of the general population—that is to say, the imported element—furnished over seventeen per cent. of so-called Canadian lunacy. Stated in another form, if the native Canadians alone are considered, there is one insane person in every 339 of the population; while the proportion among the foreign element alone is one in every 243.

During the year 1903 there were admitted to Canadian asylums 2,213 insane persons. Of this number 1,726 were born in Canada. The remaining portion, 487, representing 22 per cent. of the admissions, was foreign born. At Verdun Asylum 2,048 patients have been received since the opening of the establishment up to 1905, and of this number forty per cent. were of foreign birth. In the same institution there were in June 1905 no less than thirty persons, in a population of four hundred and sixty, who, if subjected to anything but the most cursory examination, would never have been allowed to set foot in the country.

In 1891 there were 13,342 insane persons in Canada in a population of 4,719,893; in 1901 there were 16,622 in a population of 5,318,606, being an increase, in ten years of nearly twenty-five per cent. in the number of lunatics, whereas the increase in the total population was less than thirteen per cent. We are not pretending that this increase is due wholly to the immigration of feeble-minded persons, but a large part of it undoubtedly is.

BY-LAW AGAINST SPITTING.

On October 13th. the Quebec Official Gazette published the text of the new by-law against spitting in public places.

The by-law, as published, reads as follows:—Whosoever shall spit on the sidewalks of streets, roads and public places, or on the floor of any public building or vehicle, or on the deck of any public boat, shall be liable to a fine not exceeding five dollars for the first offence, and to a fine not exceeding ten dollars for every subsequent offence."

This by-law came into force on Sunday, October 28th.; and, if the naked eye can be trusted, we have not observed that any improvement has followed. Indeed a correspondent of a newspaper relates that he spent some time in watching a policeman and a member of the Legislature diligently infringing the provision of the law. We are disposed to think that this observation was in the main correct.

No law, however stringent, will immediately destroy the function of the salivary glands, or of the bronchial mucous membranes, in policemen, legislators or private persons. A rigid enforcement of the law might create a new environment in which this function would be largely inhibited, but in the meantime some provision should be made for those who feel themselves obliged to spit. In London, we believe, a man is permitted to expectorate into the gutter, but that poor privilege is denied to us. This practice would involve a daily cleansing of the gutters, but we are not so simple-minded as to believe that such a labour would be undertaken in Montreal. The law, however, will exercise an inhibitory influence and to that extent is worthy of commendation. The Recorder is certainly giving the law an unqualified support.

VACCINATION AND TETANUS.

We take pleasure in calling the attention of those philanthropists who go by the name of anti-vaccinationists to a case of death from Tetanus following vaccination, which is so admirably reported in this number of the JOURNAL—an example of candour, which they would do well to follow.

If vaccination is an evil thing for the race, the profession of medicine desires to be informed of the fact; and in return for this choice morsel, we would ask our dissenting friends to show an equal willingness to make public the evil results which follow the neglect of the practice of vaccination.

In the discussion which followed the presentation of this case before the Montreal Medico-Chirurgical Society no evidence was adduced that the vaccine which was a local product was impure. The infection in all probability occurred in the same way as it would in any other wound. It was made clear that not less attention, but more, should be given to vaccination, and the operation—for operation it is—should be conducted with all surgical precaution.

The Canadian agents for Apollinaris water have favoured the public with a circular letter "reprinted from the MONTREAL MEDICAL JOURNAL." We have no desire to suppress the truth, so we hasten to complete the information by explaining that the article in question was reprinted from our advertising pages. The extract contains of course, a reference to the "leading English authority" which published a laudatory article on January 30th, 1904, by their "special commissioner," not, we should add, in their advertising pages but in the very body of the Journal. We made some comment upon the transaction at the time, and hope that the proprietors of this excellent water will reap the reward of their enterprise.

The Practitioner for November contains an article upon "The Liver as a Toxine Filter." The paper was read before the Eastern Oregon District Medical Society, and the author's address is given as Arrowhead Hot Springs, California. We mention these facts, because the paper is the most brilliant piece of writing which we have seen in recent medical literature. The author is Dr. Woods Hutchinson. If such contributions are common before the Eastern Oregon District Medical Society we should like to have early information of them. Such a discovery lightens the gloomy task of reading exchanges.

A profitable evening is before the Medical Society. On the 14th December the annual report of the Montreal Maternity Hospital will be laid before the members, and at a subsequent meeting it will be discussed. This is the practice which prevails between the Rotunda Hospital and the Dublin Medical Society, and is entirely commendable. The physician accoucheurs give an account of their stewardship; they invite suggestions, advice or criticism, and present to the profession the results of their experience for the general good.

Reviews and Notices of Books.

MINOR MALADIES AND THEIR TREATMENT: By Leonard Williams, M.D., M.R.C.P. London, Bailière, Tindall and Cox. Canadian Agents, J. A. Carveth and Company, Toronto. Price $1.50.

This volume of 383 pages is designed to supply the recent graduate with information of which he is sadly in need. As a rule he is well qualified to diagnose and treat diseases which he is not likely to encounter. His lectures and text books have provided him with ample means for dealing with the classical diseases, but he is at a loss as to the proper procedure in the simpler matters with which he will have to do in the first few years of his professional life. A book of this kind is especially needed since less attention is being given every year in the medical schools to the treatment of the commoner diseases in which the comfort more than the safety of the patient is at stake. Cold, coughs, sore throat, indigestion, constipation, diarrhœa, vomiting, giddiness and headache, whilst relatively of little importance in themselves, will tax the skill of the physician as heavily as the more grave conditions. The measures which are recommended in this book appear to us to be entirely sensible, and, if more freely employed than they are, would do much for the comfort of the patient and for establishing the usefulness of the physician.

MEDICAL ELECTRICTY. A Practical Handbook for Students and Practitioners. By, H. Lewis Jones, M.A., M.D., F.R.C.P. Lond. Fifth Edition with illustrations. London, H. K. Lewis, 136 Gower Street, W.C., 1906.

So recently as January 1905 we had occasion to call attention to the fourth edition of this book. The present volume is the fifth edition and appears with certain alterations. A rearrangement of the subject matter has been adopted; sections have been added upon the current waves of coils employed for medical purposes, upon the use of mechanical means for obtaining interrupted currents of measured duration; upon the introduction of drugs by electrolysis, and on the treatment of rodent ulcer by zinc ions. A chapter has been added on the treatment of skin diseases by electricity, and the chapter on X-Rays has been extended to sixty pages. Yet this volume contains 17 fewer pages than that of 1905. Upon the previous occasion we said that no practitioner of medicine could afford to remain in ignorance of the value of electricity and its allied forms of energy in the treatment of diseased conditions, and that

this book of Dr. L. Jones would prove to be a safe guide. We repeat these statements with more confidence as this opinion is borne out by the wide recognition which this book has received. It is an important addition to Lewis's practical series.

THE MEDICAL STUDENTS' MANUAL OF CHEMISTRY. By R. A. WITTHAUS, A.M,. M.D. William Wood and Company, New York. Price $4.00.

The sixth edition of this admirable work has just appeared. It is very complete and many portions, notably the organic and physiological chemistry, are rewritten and greatly extended. The arrangement and the selection of the matter shows the author to be not only a scientific chemist but also one who has a very clear idea of the chemistry useful to the medical student and the general practitioner. The subject throughout is confined as closely as may be to the general truths of chemistry and its applications to medical science. The book covers the entire field of chemistry beginning with physical action of chemical interest leading up to the discusson of chemical phenomena in general and then the elements in their natural groups according to the periodic law of Mendelejeff. Some 300 pages are devoted to organic chemistry, and 200 to physiological chemistry. The chemistry of the enzymes and proteids is well up to date, and the same may be said on the sections on urinalysis and blood. It is too large a book for a student textbook, but deserves a place on the bookshelf of the practitioner. It is however not pleasant for a British subject to be called upon to face on every page such outrages on the King's English as. "oxid," "sulfat." "chlorid," "sulfid," "Bromin," etc. If "sulfur," why not be consistent and write "fosforus, fysics, fase-rule, and fenol."

R. F. R.

VOICE PRODUCTION IN SINGING AND SPEAKING. WESLEY MILLS, M.A., M.D., F.R.S.C. Professor of Physiology, McGill University, Montreal. J. B. LIPPINCOTT, Philadelphia.

When one considers some of the many divergent and erroneous views held by so-called vocal teachers, Professor Mills' book on "Voice Production in Singing and Speaking" will be welcomed by all who are interested in this subject from an artistic and scientific standpoint.

Although many books on this subject have been written, they have not struck the happy medium; they have been either too technical to reach the lay mind or they have lacked the fundamental principles governing voice production. The author states in the preface to his book:

"Believing that practice and principles have been too much separated, he has endeavoured to combine them in this book. His purpose has not been to write an exhaustive work on vocal physiology with references at every step to the view of various authors; rather has he tried always to keep in mind the real needs of the practical voice user, and to give him a sure foundation for the principles that must underlie sound practice."

Professor Mills has succeeded admirably in showing the relationship existing between the scientific, artistic, and practical aspect of his subject. The first chapter is devoted to the claims and importance of Vocal Physiology. The author lays stress upon the importance of the study of technique, and, at the same time, impresses upon the vocalist, speaker, and teacher, the necessity of having a theoretical, and practical, knowledge of the structures, and working of the mechanism employed.

To quote again, Dr. Mills very aptly states: "The physician to-day who treats disease without reference to anatomy, and physiology, is at best, but a respectable charlatan. Why should teachers, and students, of voice production be content to remain in the advanced present, where they were hundreds of years ago"?

The succeeding chapters follow in natural sequence, and are devoted to a consideration of Breathing, the Voice-Producing Mechanism, Sound, Laryngeal Adjustment, Resonance Chambers, the Registers of the Singing Voice. And the final chapters are devoted to the Fundamental Principles Underlying Voice Production, the Hearing-Apparatus and Hearing in Music. The last chapter deals with the Consideration of General and Special Hygiene and Related Subjects.

Each chapter has been ably dealt with, particularly the one relating to Registers of the Singing Voice, about which so much 'confusion, difference of opinion and controversy' have existed. At the end of each chapter a summary is given which enables the reader to grasp with ease the subject discussed.

This book is undoubtedly one of the most original and comprehensive works on this subject, and it would form a most desirable text-book for teachers, and pupils, and all who are interested in the subject of voice production. It is profusely, and beautifully, illustrated, and in that respect is a credit to the publishers.

A Textbook of Histology. By Frederick R. Bailey, A.M., M.D. 2nd Edition. Wm. Wood and Company, New York, 453 pages. $3.00 net.

The second edition of Bailey's Text-book of Histology, like its predecessor, reflects great credit on both author and publisher.

In the subject matter of the text little change has been made except in the chapter on the nervous system, which has been partly re-written and several new and helpful diagrams have been introduced, assisting materially in the understanding of the various motor and sensory conduction paths. There has been a further elaboration and classification of these conduction paths in the cord and medulla.

In the chapters devoted to general technique and staining, there are new and valuable hints regarding the preparation of histological material, and some new stains are given, especially "Cajal's Method for Staining the Neurofibrils in the Nerve Cells," which is given in detail.

The book, with its numerous illustrations and lucid descriptions, maintains its reputation as a first class text-book of normal histology. The first Edition was warmly commended in our issue of January 1905.

W. M. F.

Medical News.

MONTREAL MATERNITY HOSPITAL

The first report of the operation of the Montreal Maternity Hospital, since occupying its new building has been made public. It deals with eleven and a half months, from the time of opening October 17th, 1905, to the close of the fiscal year September 30th, 1906. We are indebted to Dr. J. C. Cameron, physician-accoucheur, and to Dr. H. M. Little, superintendent, for the following abstract of their results.

During this time there have been admitted 448 patients. Of these 199 were admitted some considerable time before confinement. The total number of hospital days for all patients was 10, 904, an average per patient of 24.3 days. The average number of days *ante-partum* for those so admitted was 21.8. The average stay of the patients after confinement was 14.6 days.

General Results. *Maternal*: Discharged in good condition, 407, transferred to other hospitals, 2; remaining in hospital October 1st., 31; died, 8; total, 448.

Infantile: Mothers admitted, 448; admitted post partum, discharged, ante-partum, etc. 53; total 395.

Twin pregnancies were, 8; total births, 403; dead born, still-born and died in hospital, 49; remaining in hospital, October 1st, 19; total, 68; discharged in good condition, 335.

The foetal mortalities are classified as follows: Dead-born, 23; still-born, 10; premature births, (children not viable), 7; congenital malformation, 2; and other deaths, 9; total, 49.

Technique: The routine technique has been based upon the assumption that normally the vagina is free from pathogenic organisms: that is to say, as a preparation for vaginal examination the vulva is shaved, scrubbed with green soap and warm sterile water, and bathed with alcohol, after which a towel soaked in bichloride of mercury 1 in 3,000, or formalin solution 1 in 3,000 is applied for at least three minutes. For hand disinfection permanganate of potasium and oxalic acid have been employed, though there has been considerable latitude allowed in this respect, particularly in the case of private patients, many practitioners perfering lysol and creolin. The use of rubber gloves was commenced early last fall and has become quite general. They are now employed in practically all major operations as well as in the routine work of the Hospital. For operative procedures the vulva is more throughly cleansed by the addition of permanganate of potash and oxalic acid to the usual technique noted above. Ante-partum douches have been practically discontinued except in those cases where there is distinct evidence of infection. The use of the post-partum douche is being gradually restricted to cases of severe hæmorrhage and operations such as high forceps where considerable manipulation has been necessary.

The Pelvis: *Classification of pelves*: Normal, 379; contracted 20; generally contracted, 9; rachitic, 2; flat and rachitic, 6; simple flat, 3; unmeasured pelvis, private patients, etc. 49; total, 448.

From the above table made according to the accepted standard of Michealis and Litzmann it would appear that contracted pelves are unusually infrequent in Canadian women; indeed, the more marked grades of contraction have invariably been noted in those patients from foreign countries.

Pregnancy: The various types of pregnancy are classified as follows: normal, 236; doubtful, including private patients, those admitted post-partum, those in Hospital October 1st, and 1 patient not pregnant, 139; abnormal, 73; total 448.

Complications of Pregnancy: *Toxaemia*:

Among the complications of pregnancy the toxaemias have been most frequent.

The unusual frequency of these conditions suggests the urgent need of further study of the partition of the nitrogen execretion. In albuminuria, simple or complicated, the Riva-Rocci instrument as modified by Cooke and Briggs has been a valuable aid in determining the necessity for emptying the uterus. Variations of as much as 80 mm. in systolic pressure have been noted in readings before and after operation.

The treatment of eclampsia has been conservative. The convulsions were controlled by morphia, and chloral, till labor had progressed suffi-

ciently to allow the uterus to be emptied with the minimum of danger to the mother. As result the maternal mortality has been more satisfactory than the infantile.

Abortion: This has been the next most frequent form of complication. There were three complete abortions; while in four instances a threatened abortion was averted by rest in bed and appropriate treatment. Nine cases of incomplete abortion were completed by operation. In all cases the fingers were used to remove debris and the uterine cavity was douched with hot normal salt solution, and left unpacked to allow the freest possible drainage. In the majority of cases this treatment was followed by a chill, rapid rise of temperature, with gradual fall to normal. This phenomenon seemed the result of a rapid absorption by the cleansed inner surface of the uterus of that portion of bacterial toxins rendered more rapidly soluble by the saline. The severity of the symptoms occasioned by this simplest method of treatment is used as an argument against the use of a curette which would not only increase the area from which absorption might take place but also further the passage of organisms through the uterine wall and into the blood stream.

Mitral Stenosis: This complication was noticed three times, the patients all being in fair condition on admission. The gravity of this complication of pregnancy depends absolutely on the degree of compensation present, and the susceptibility of the heart to digitalis.

Among the other complications may be noted diabetes, haematuria with cystitis, concealed hæmorrhage, phlebitis, pyelonephritis and two cases of placenta previa.

Classification of Labour, spontaneous normal, 269; spontaneous premature, 17; induced premature, 4; induction of labor at term, 1; breech extraction, 13; accouchement forcé, 10; basiotripsy, 3 forceps, (high, 7; mid, 20; low, 22); total 49.

Version and extraction, 16; version external, 1; pubiotomy, 1; manual conversion of abnormal presentation with subsequent spontaneous labour, 2; manual removal of placenta, 5; post-partum hæmorrhage, 3; accidental hæmorrhage, 1.

Forceps and Version. Attention is directed to the tables, showing the comparatively unfavourable results of high forceps as compared with version, particularly with respect to foetal mortality and maternal morbidity. No douches were employed after the completion of the version though they were given as a routine after high forceps. The inference is that a douche is unnecessary after an aseptic operation.

Induction of Labour. Labour was invariably induced by Krause's method. Douches were not used as a routine practice either before or

after operation and the results seemd to be equally good whether douching had been used or not. A general anæsthetic was not necessary.

Accouchement forcé. Manual dilatation was always a preliminary to delivery by forceps or version. Two methods were employed, the bimanual and Harris's, Bossi's, Heagar's or other metallic dilators were not used. Immediate suture of cervical lacerations was frequently successful, but the slightest possiblity of infection contra-indicated this procedure. Basiotripsy was performed only upon children dead in utero.

A case of pubiotomy is reported by Dr. D. J. Evans in this number of the JOURNAL. Post-partum hæmorrhage was infrequent, though the average length of the third stage of labour was short. Particular attention was directed to the estimation of the time of separation of the placenta, and after this had occurred a modification of Crédé's method of expression was employed.

Manual removal of the Placenta: In four cases where manual removal of the entire placenta was necessary, a pathological condition of that organ or of the uterus was found. That is, in two cases the patient had been curetted after a previous labour or abortion, and the placenta was removed with much difficulty, the villi having penetrated into the muscle wall of the uterus. The presence of a myoma in the uterine wall was answerable for the condition once, while in a further instance, the organ was partially retained owing to an unusual insertion. In all of these four cases the placenta was removed with a gloved hand, and no post-partum douche was given; but in those cases where removal was necessary after operation a douche was almost invariably employed. The results from the stand-point of morbidity do not seem to have been more favourable in the cases that were douched.

Complications of the Puerperium: Complications of the puerperium have occured chiefly in patients sent in by outside physicians on that account. This was particularly noteworthy in the case of infections: for apart from one febrile case, where a peri-rectal abcess developed as the result of a misplaced suture there was no single instance of childbed fever (streptococcus) noted in the wards, among the hospital's own patients. Gonorrhoeal infection was noted nine times, the diagnosis being made after examination of the lochia. There were no breast abcesses, careful treatment during the stage of engorgement having been an efficient preventative.

Among the other complications may be mentioned thrombosis, peritonitis, parotitis, mitral stenosis and puerperal insanity.

Care of Premature Infants: Owing to lack of space the incubator in use at the old maternity has not been employed, nevertheless there was

unusual success in rearing premature infants, which can only be attributed to the devotion of the nurses, and the careful methods of artificial feeding employed. Two babies weighing at one time or other less than three pounds have been successfully reared, while with those of greater weight the results of artificial feeding have been excellent. In most instances mixtures of cream and whey have given uniformly good results, though in others the dilution of whole milk with water or barley water has seemed preferable.

Ophthalmia: Smears have been made from the secretion in all cases of even mild conjuctivitis. There have been but two cases of severe ophthalmia, and in but one of these was the gonococcus the infecting agent. In this instance the mother was infected and in spite of the usual treatment (instillation of 2 per cent. silver nitrate) one of the child's eyes showed evidence of infection about the eight day post-partum. The eye was markedly improved, but not quite normal, when the mother insisted on removing the child on the fourteenth day.

Morbidity: All cases in which the temperature at any time during the puerperium has reached, or exceeded, 38.1 C (100.6 F) have been classed as morbid. In addition, for the purpose of comparison with the statistics of the Rotunda Hospital in Dublin, figures have been prepared based upon the standard suggested by the British Medical Association. According to the Hospital's own standards, which, it may be said, seems much more exact, the morbidity percentage was 16; according to the British standard it was but 9.18. When it is remembered that the temperatures were taken every four hours, and for fourteen days, it will be seen that this last figure compares favourably with the 8.77 obtained in the Rotunda.

Maternal Deaths. There were eight maternal deaths during the year, and brief synopses of the clinical records are given, together with the findings at autopsy in six, of the eight cases.

1. Puerperal septicæmia with peritonitis. A forty-six year old primipara brought in from a private lying-in-hospital, where she had been rather severely handled. The child was dead and basiotripsy was done. Death four days post-partum.

2. Puerperal septicæmia with metastatic abscesses. Patient confined outside, and admitted in the fourth week of the puerperium. She died three days after admission.

3. Patient admitted to hospital in deep, probably post eclamptic coma. The child was dead and the patient herself died within about twenty hours after her admission. No autopsy.

4. Puerperal septicæmia with peritonitis. Admitted post-partum. The placenta had been removed manually. The patient died on the fortieth day.

5. Pyelonephritis with septicæmia and cystitis. Patient admitted suffering from severe pain in left lower quadrant of the abdomen, and with evidence of cystitis and specific vaginitis. Spontaneous premature labour, and death on the fourth day post-partum.

6. General streptococcus infection of mother and child. Patient admitted in labour and suffering from fever, the result of ulcerative sore throat. She was not examined during labour which occurred spontaneously within two hours of admission. Immediately after labour her condition became grave and she died suddenly ten hours post-partum. The child, apparently healthy, when born, died the following morning. Evidence of general streptococcus infection was present both in mother and child, the case being one of undoubted auto-infection with subsequent placental transmission.

7. Nephritis. Patient admitted at request of practitioner, who had her under observation for several days. She had had several convulsions, and when admitted was in deep coma, from which she did not rally.

8. Pernicious vomiting with hepatitis. The patient, almost at term, was admitted at request of her physician on account of uncontrollable vomiting. She was kept under observation for three days and delivered herself spontaneously of a dead child. The vomiting persisted however, and she died three days later, the result of toxæmia.

ROYAL VICTORIA HOSPITAL.

Monthly Report for October:—Patients admitted during the month 294; patients discharged, 272; patients died, 14. Medical, 94; Surgical, 118; Ophthalmological, 19; Gynæcological, 38; Laryngological, 25; *Out-door*: Medical, 904; Surgical, 839; Eye and Ear, 423; Diseases of women, 142; nose and throat, 480; Total 2788. Ambulance calls, 91.

CANADIAN MEDICAL ASSOCIATION.

The members of the medical profession in Montreal met on November 8th, in the rooms of the Medico-Chirurgical Society, to make preliminary arrangements for the meeting of the Canadian Medical Association which will be held in Montreal in 1907. The president, Dr. A. McPhedran of Toronto presided, and there was a large attendance of members.

Dr. McPhedran addressed the meeting and outlined the plan which he thought should be followed. He discussed the most suitable time of year for the meeting as between June, August or September. He referred to the necessity of an official Journal for the Association, and recommended an additional number of sections.

At the conclusion of Dr. McPhedran's address a committee of twenty members was named to undertake the arangements, whose names are: Drs. Shepherd, Blackader, Lachapelle, England, Wm. Gardner, Roddick, Armstrong, W. F. Hamilton, Shirres, St. Jacques, Harwood, De Martigny, Garrow, Reddy, Boulet, Monod, Mercier, Villeneuve, Aubrey, Hingston, and Birkett, and Mackenzie, *ex officio*.

Contagious disease cases, in Montreal according to the records of the Hygiene Department have reached the total number of 396 during the month of October, and bring the total number of cases since the beginning of the year up to 3,642. Measles claimed the largest number of patients during the month, 90 cases being reported. Typhoid fever comes next on the list with 80 cases. Of trachoma 10 cases have been discovered among immigrants during the month, making the first to be reported during the present year.

A protest against the appointment of Dr. Coughlin, of Peterboro, as superintendent of the Institution for the Deaf and Dumb, was made at a meeting held on 27th October by the Toronto members of the Ontario Deaf Mute Association.

The medical practitioners of the Counties of Renfrew, Lanark and Carleton have formed a new organization which will be known as the Ottawa Valley Medical Association. The first meeting was held in Arnprior and the next will be held in Carleton Place. Dr. Preston was elected President, Dr. Lynch Vice-President, Dr. Kelly Treasurer and Dr. McIntosh Secretary.

Dr. A. N. Trembert, of Brantford, died on the 4th of November, 1906 in the 72nd year of his age. Dr. Trembert had studied his profession in Munich.

Dr. William A. Ball died on the 3rd of November, 1906 in the 38th year of his age. Dr. Ball was a graduate of Trinity, and of the University of Toronto.

Dr. William Warwick has been appointed Assistant Pathologist to Dr. G. A. B. Addy in the St. John General Hospital. Dr. Warwick is a graduate of McGill, '04.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

FRANCIS W. MURRAY. "Early Operation in Traumatic Intracranial Hæmorrhage." *Annals of Surgery,* September, 1906.

This is a good general article and is useful in that it points out to the general practitioner the great responsibility that so frequently devolves upon him in the matter of the early diagnosis of intracranial lesions. The author complains that there still exists in the mind of the general practitioner a great deal of confusion as to the condition inside the skull following upon any given traumatism, especially in regard to the differentiation between concussion and compression. He points out that too many cases are still regarded as concussion, after all the classical signs of compression have been present even for days; and on the other hand that, when the physician finally does come to the conclusion that there is something beyond mere concussion, he is too apt to call it contusion or laceration of the brain, and *ipso facto* inoperable; whereas in this latter instance it is often purely subdural or epidural hæmorrhage which might be relieved by operation. The object of his paper in fact is to suggest a more frequent resort to exploration of the skull in the hope of saving otherwise fatal cases. He cites a number of cases illustrative of the difficulties of exact diagnosis and of the value of exploratory operation. While he says nothing particularly new with regard to epidural hæmorrhage his opinions concerning the treatment of subdural hæmorrhage are, as the tendency now is, towards a greater radicalism. The expectant treatment is no longer justifiable, at least in many cases. Contusion of the brain is not so frequent an accompaniment as was formerly supposed, and in his opinion its presence is not only not a contra-indication, but on the contrary, an indication, inasmuch as by the removal of the clot the cerebral circulation is improved, and thus a beneficial influence is exerted on the accompanying contusion. He refers to the analysis of subdural hæmorrhage by Bowen in Volume 59 of Guy's Hospital Reports, which shewed that out of 72 cases of traumatic subdural hæmorrhage, of which 52 cases were operated on, there were 28 recoveries. That is well over 60 per cent. of recoveries by operation. A rather significant fact, and one which suggests that the results might have been better, was that in ten of the 20

non-operated cases death was due solely to compression from hæmorrhage, a condition favourable for operation. He concludes therefore that when hæmorrhage, whether subdural or epidural, is at all likely, and in the presence of marked compression, the logical indication is removal of the clot, which necessitates an exploratory operation, and that the indication is as strong in the one as in the other. In conclusion however, he sounds a note of caution, in that he does not agree with those who advise that the skull should be opened in every doubtful case.

H. A. Ballance. "Cerebellar Hæmorrhage: Operation: Recovery:" *Surgery, Gynaecology and Obstetrices,* August, 1906.

Mr. Ballance here reports a case which may be designated as unique. The patient was a boy of 12, admitted into hospital in the year 1902. Two months previously he had fallen upon his head off another boy's back, the head striking the ground over the parietal eminence of the right side. He was dazed, but could walk home; had nose-bleed but no vomiting, and was up and about the next day; appearing to have been well for some weeks. Six weeks after the accident and two weeks before admission he began to suffer from severe headache, giddiness, frequent vomiting, unsteady gait, weakness in the left leg. Within the previous two days he had become very drowsy. Upon examination he lay curled up on his left side, retraction of the neck was painful, temperature 100, pulse 80, pupils equal, of medium size, reacting well. He had a well marked double optic neuritis but no ophthalmoplegia. His gait was staggering and he tended to fall backwards to the right. He had a distinct weakness, and inco-ordination of the left arm, and the left leg was weak; face unaffected; left knee jerk exaggerated, right diminished, no clonus, no anaesthesia; cutaneous reflexes normal. Headache was severe and frontal; he had giddiness on sitting up, objects rotated from left to right during attacks of giddiness, and he himself seemed to be going in the same direction. This, by the way, according to the observations of Stewart and Holmes, indicates definitely an intra, as opposed to an extra, cerebellar lesion, while the direction of the rotation, in this case to the right, indicates a lesion of that side. He was kept under observation for ten weeks. At the end of the first fortnight some weakness was apparent in the lower part of the face on the left side. Lateral nystagmus to the left developed, and paresis of conjugate deviation to the left; no squint; sight progressively worse. The left paresis and staggering gradually increased, but the vomiting and headache grew better. Operation five months after accident. The left cere-

bellum was opened in two stages; in the substance of the lobe at a depth of 1¼ inches, a clot was evacuated; no evidence of new growth. Recovery was slow but uneventful. Four years later he was in excellent health, there was no staggering, co-ordination was good. There was still a slight lateral nystagmus of large excursion to the left, and oscillation was also present on upward movement of the eyes. Vision was almost normal. There remained also a slight left paresis of the arm and incoordination on intentional movement. The author remarks upon the rarity of primary cerebellar hæmorrhages. When they do occur they are nearly always due to disease. He can find no record of any previous operation for hæmorrhage. Only one case has been found of a primary traumatic cerebellar hæmorrhage reported by Ratcliffe of Birmingham in 1894. This case died 4½ hours after a fall on the head with a free interval. The hæmorrhage at autopsy was found in the middle lobe of the cerebellum with break into the fourth ventricle. He calls attention to the simulation of a tumour which his case presents, showing as it did a latent period of six weeks before the onset of symptoms. Naturally, the reviewer cannot help suspecting that possibly this hæmorrhage was still in the substance of a tumor, in spite of the lack of evidence. Occasionally one is obliged to await autopsy findings before arriving at absolute certainty; and occasionally one does not even then arrive.

E. W. A.

Charles H. Chetwood, M.D. "Prostatectomy in Two Stages." *Annals of Surgery,* October, 1906.

The procedure advocated in this article comprises a preliminary perineal drainage, followed by a perineal prostatectomy when the condition of the patient has improved. It is indicated in that class of cases which may be described as bad risks. A summary of these cases shows the average age to be 70. Two of them, in the neighbourhood of 80 years, were exceedingly feeble, and were considered as questionable risks on this score. One gave evidence of advanced renal implication. There were emergencies, in that they had for several days suffered from acute retention relieved by aspiration. One of these had infiltration of urine in this prevesical region and two of them intravesical hæmorrhage. Seven out of the eight reported had the combined operation performed; one case, complicated by advanced renal disease, had perineal drainage and the galvano-cautery. All of them have done remarkably well, the last reports dating from several weeks to twelve months after operation. Special stress is laid upon the great value

of formaldehyd gelatine as a local hæmostatic. With its employment he now never has any serious bleeding while operating, and its use prevents post-operative bleeding and clot formation with consequent blocking of drainage tube. As a result of the preliminary drainage the prostate is relieved of its congested condition, and the line of drainage between the prostatic tissue and capsular surrounding is more accessible and easily separated.

J. Ernest Lane. F.R.C.S. "A Review of Recent Work in Venereal Disease." *Practitioner,* October, 1906.

During the past year the spirochaete pallida has been the object of much research. This bacillus, discovered by Schaudinn in certain syphilitic lesions, is a minute protozoon, the average length being 5-10 microns, and breadth ½ micron; in shape it is curved somewhat like a corkscrew, the curves varying in number from 4 to 20, while it is sharpened at its extremities. The organism is motile, and occasionally flagellated. So far it has not been grown on any artificial culture media. It must be distinguished from another spirochaete which is found in ulcers, venereal and otherwise, and in the smegma preputii. This forms a larger spiral with fewer curves, is saprophytic, and stains more readily, and is known as the spirochaete refringens. The points in favour of the theory that this spirocheate plays an important part in the aetiology of syphilis are given as follows: Alvarez found it constantly present in the various stages of syphilitic lesions, but never in non-syphilitic lesions. It was found in the organs of congenital syphilitics, in the placenta, and in the secondary lesions of monkeys, being capable of transmission by inoculation from one animal to another. Pereira concludes that the infective virus of syphilis, whatever its nature, is not ultra-microscopic; that though not present in tertiary lesions it is invariably found during the actively contagious periods; that it was present in the internal organs and blood of congenital syphilitics, and in monkeys artificially infected with syphilis, but never found in any other morbid condition, or in the healthy subject. Levaditi has arrived at the following conclusions: The influence exerted by the spirochaete on the genesis of visceral and cutaneous lesions, as well as on the course of the disease in the new-born, is evidenced by the fact that the organs in which this protozoon is found in the greatest numbers,—the liver, lungs, suprarenal capsules and skin,—are those most affected by the syphilitic veins. Organs, such as the brain and kidneys, which are not so frequently attacked in congenital

syphilis, are comparatively free from the organism, a fact which definitely disproved the hypothesis that the spirochaete was only a secondary infection. This hypothesis was also rendered improbable by the fact that a large number of the spirilla were found in the internal organs of a fœtus born dead, and in children, who died after a few inspirations, and who had nothing introduced into their digestive tract. There was a distinct relationship between the severity of the disease and the number of the organisms found. The organism was found in the greatest numbers in the liver, which was the organ to first receive the blood charged with the virus from the maternal placenta, and this organ was the one most frequently attacked in congenital syphilis. The influence exercised by the spirochaete on the genesis of syphilitic lesions is a direct one, and is not due to any toxins elaborated by these parasites. The fœtal organism defends itself against this invasion by a phagocytosis, especially well marked in the pulmonary alveoli. Maclennan, on the other hand, believes that the spirochaetes are merely stages in the development of the specific organism. He has found a round and much smaller body to be much more frequently and abundantly present and has traced the development of these bodies up to the spirochaete form. Thesing considers there is no proof of the spirochaete being an ætiological factor in syphilis: while Castellani found an absolutely identical organism in seven out of eleven cases of yaws. Metchnikoff, in a paper on the prophylaxis of syphilis, compares the mortality rate of this disease with others and found that of 734 deaths over 11 per cent. were due to syphilis and its sequelæ, as against 22 per cent. due to tuberculosis, and 10 per cent. to pneumonia. So far the attempts to secure an efficient serum or vaccine have not been successful, and for many reasons sero-therapeutic measures do not appear to be of practical application. The method which has given the best results is the application of a mercurial ointment, one part calomel to three of ointment, to the point of inoculation. Numerous experiments have shown that when this ointment was thoroughly rubbed in to the infected part within an hour after inoculation no subsequent symptoms of syphilis developed. Regarding the intra-muscular treatment, Lambkin believes this method to have been of very great use in improving the service. He has found the soluble salts of mercury to be slow and untrustworthy in action. Of the insoluble salts calomel is by far the most active, and might be reserved for urgent cases where a rapid effect is required, as its introduction is very painful. Salicylate of mercury was found to be untrustworthy and slow. He now prefers a cream made of metallic mercury and lanolin, ten minims of the

cream representing one grain of mercury, and claims that it is especially indicated on account of its gradual, even, and slow absorption. The dosage is one injection a week until all active symptoms have disappeared, generally for six weeks to two months, followed by a fortnightly injection for three months, then a two months' rest, then a fortnightly course of injections for three months, the average period of treatment and repose being two years. Mr. C. Andry has employed a suppository made up of cacao-butter and metallic mercury three centigrammes, the dosage being one suppository a night for a month, then a rest for four or five days followed by another month's treatment, and so on alternately. He does not consider it equal to intra-muscular or inunctious treatment in severe cases, but found it quite satisfactory in mild cases, preferable to renal treatment in cases where the intestinal tract was deranged, and the most efficient plan of treatment in children.

Richard Douglas, M.D. "The Etiology, Prognosis, and Indications for the Surgical Treatment of Tuberculous Peritonitis." *Amer. Jour. Med. Sciences,* October, 1906.

The writer has collected quite a large number of statistics from various investigators into the etiology of tuberculosis in general and tuberculous peritonitis in particular. In seeking to trace the channel of infection of the peritoneum, it must be remembered that the bacillus is immobile, slow of growth, and produces very varied tissue changes in places where it lodges. Quite a number of investigators show tuberculous infection may take place during intra-uterine life through the circulation, and also by extension from a tuberculous Fallopian tube. The writer is inclined to think that, though, at present, the general belief is that tuberculous peritonitis is secondary, evidence will soon be forthcoming to show it may be primary, and cites results obtained by research work along this line. The subacute and chronic ascitic forms give the best prognosis. In only exceptional instances of complications and for the relief of special conditions should operation be undertaken in the fibrous form. The ulcerous form offers an unfavourable outlook, but even these may be cured. All forms but the peracute are at least temporarily benefited, and a very conservative estimate of absolute cures may be placed at almost 50 per cent. Contra-indications to surgical intervention are a miliary tuberculosis, active tuberculous lesion elsewhere, pleurisy, the ulcerous form with emaciation and prostration, and the fibrous form. Simple incision is not sufficient, the exudate must be completely removed, but without injury to the intestines; drainage is not desirable and may be dangerous, irrigation is not

essential, and foci of infection should be removed if section can be made through healthy parts. In comparing the mortality of cases treated medically with those operated upon, Shattuck has shown the former to give a mortality of 68 per cent. against that of 37.5 per cent. for those treated surgically.

W. D. B.

MEDICINE.

UNDER THE CHARGE OF F. G. FINLEY, H. A. LAFLEUR AND W. F. HAMILTON.

A. O. J. KELLY. "Infections of the Biliary Tract, with special reference to Latent (or masked) and Typhoid Infections." Certain Remote consequences of infections of the biliary tract, with special reference to (1) Cholelithiasis and Cholecystitis; (2) Adhesions of the Upper Abdomen; (3) The General principle of Treatment; (4) The Indications for Surgical Intervention. *American Journal of the Medical Sciences,* September, 1906; November, 1906.

The infectious agents are usually motile bacteria as the bacillus c. communis, and bacillus typhosus, and to a much less the non-motile forms, streptococci and staphylococci. Biliary infections complicating pneumonia and influenza suggest the possibility of the pneumococcus and the influenza bacillus respectively, as the etiological agent, but as far as Dr. Kelly knows, these organisms have not been isolated from the local lesions.

The paths of infection are (1) the diverticulum of Vater and the common bile duct; (2) the portal circulation; (3) the systemic circulation; (4) the lymphatic circulation; (5) directly through the wall of the gall bladder or the gall ducts from the peritoneum.

Of these channels of infection the portal circulation seems to be the most frequently traversed by infecting agents. While the mechanism of infection by way of the diverticulum of Vater and the common bile duct is difficult to understand, yet it would seem that in the past the importance of this source of infection has been overestimated. The other methods, viz., by way of the systemic circulation, and the lymphatic circulation, while they are not to be ignored, are comparatively rare.

The latent or masked infections are studied from the point of view of typhoid infections since the great majority of them are due to the typhoid bacillus. An important suggestion in this connexion is made by Mr. Kelly concerning typhoid fever epidemics. There may be, and doubtless there is, in many cases a continuous re-infection of the intestinal tract by the frequent discharge of virulent typhoid bacilli from a chronically infected gall bladder. The individual is apparently

healthy and yet he may spread the infection. The biliary infection though acute and occurring during the course of typhoid, may be quite latent clinically. Dr. Kelly has come to regard nausea during the course of typhoid fever, when not due to other obvious causes, as quite significant of gall-bladder infection.

The relation of Gruber-Widal reaction to cases of jaundice is more easily explained from the point of view that jaundice results from former typhoid infections, and the serum reaction may be present years after the febrile course is ended. Typhoid infection of the biliary tract may yet explain many of the ill-understood forms of jaundice—the so-called febrile jaundice, infectious jaundice and Weil's disease.

Among the symptoms of cholecystitis pain is to be regarded as due to an acute active infection. This may be of the nature of colic and lead one to suspect the passage of gall-stones. The fever must also be explained in the same way—a manifestation of infection.

Those adhesions so commonly found post-mortem in the upper part of the abdomen originate chiefly with infections in the biliary tract. Their diagnosis is most difficult and can be made only by excluding factors causing similar symptoms.

The general indications of treatment may be considered under three heads: (1) to cause solution of the stone or stones; (2) to cause the discharge of the stone or stones, and (3) to treat the complicating infection. The solution of gall-stones is scarcely the object of rational treatment. There is but little if any trustworthy evidence that gall-stones are ever dissolved. Naunyn, in discussing this point, suggests that the action of bacteria accounts for the disintegration of the stones. In treating the complicating infection the object is to restore the condition of latency. This may be done by promoting the free flow of bile. Infecting bacteria and their toxins are thus eliminated. Surgical intervention is indicated in the event of an acute intestinal obstruction in a cholelithitic subject, or in a patient in whom adhesions are suspected. It is indicated also by a persistently enlarged gall bladder, in impacted gall-stone with chronic jaundice, and in these obscure cases usually diagnosticated indigestion, gastralgia, recurring vomiting, etc., in which with reasonable certainty the presence of peri-cystic, peri-gastric or peri-duodenal adhesions may be surmised.

Leonard S. Dudgeon. "A Study of the Various Changes which Occur in the Tissues in Acute Diphtheritic Toxæmia, more especially in reference to Acute Cardiac Failure." *Brain*, No. 114.

A valuable addition to our knowledge of the important changes due to diphtheria infection has been made by comparing the results of the

pathological investigations in human cases with those found in inoculated animals. While the views of Flexner, Vincent, Müller and others in many points have been confirmed, it appears that by Dudgeon's work some valuable points have been gained. The paper repays a careful perusal, but in this connection a summary of results must suffice.

(1) The most important lesion in the acute cases is a fatty change of the heart muscle and diaphragm, which is due to a direct action of the toxins on these tissues.

(2) Similar fatty changes may be found in certain of the important viscera, more especially the adrenal gland and liver.

(3) The expression "Cardiac paralysis" in acute diphtheritic toxæmia should be abolished and be replaced by "Acute cardiac failure."

(4) The changes found in the nervous system are secondary factors and not the primary cause of the cardiac failure.

(5) The antitoxin, if given in sufficient quantity and within the first forty-eight hours, may prevent, or at any rate will considerably diminish the possibility of death from cardiac failure.

A. F. Martin. "The Significance of some Enlargements of the Thyroid Gland." *The British Med. Journal*, September 22, 1906.

On the relation of thyroid enlargement to endemic causes, Dr. Martin summarizes his conclusions:—

1. The only common condition to all cases is the water, ...

2. The water in no case has shown much total solid impurity.

3. It is seen that cases have occurred indiscriminately on sandstone and millstone grit.

4. If there is an endemic influence it is not contained in the lime and magnesium constituents, many waters being harder and producing no goitre.

5. Its action is only a slight one and may accentuate the changes in the gland due to causes primarily mentioned.

The writer draws the following conclusions concerning other causes:—

1. That a call for increased functional activity is sufficient cause for simple enlargement of the thyroid gland.

2. That such a call is frequently given by the metabolism of the organism in connexion with growth and development, with the performance of the uterine functions in the female, and with chlorotic conditions in young girls.

3. That the phases of enlargement of the thyroid included under the term "thyrocele" are a response to such an appeal from one or

more of the above causes in an individual whose thyroid function is feebly performed.

4. That an undue physiological activity is a potent cause for pathological change, so this simple hypertrophy, when necessitated for prolonged periods lays the foundation of the pathogenesis of the degenerate cystic and adenomatous bronchocele.

5. That there is often some influence exerted by heredity upon the thyroid function.

CLAUDE B. KER. "Antisepsis and Asepsis in the treatment of Typhoid Fever." *The Edinburgh Medical Journal*, July 1906.

"Jez,—Antityphoid Extract in Enteric Fever." *Wiener. k-thera. Wochens.* No. 51. 1905.

"Chantemesse." *La Presse Médicale.* February, 1906.

In the experience of Ker beta-naphthol is regarded as the most efficient intestinal antiseptic. Given in doses of from 6 to 9 grains every four hours throughout the fever there has been found no reason to believe that it in any way damages the kidney even though the urine becomes very dark coloured. While this is true there seems to be no proof of any specific action of the drug in lessening the duration of the fever, the progress of the ulceration or the occurrence of relapses. The same may apply to other intestinal antiseptics, excepting, perhaps, calomel, which Ker regards with favour.

Queirolo's method of rectal feeding preceded by irrigation of the bowel with a solution of boracic acid, the only drink allowed being "a lemonade made with hydrochloric acid, and Williams' starvation system of a half pint of milk in twenty-four hours, with plenty of water until the temperature reaches normal, have this to be said in their favour, that rest to the bowel is secured. Williams' method carried out in the Southern Hospital at Liverpool has shown good results. In addition to the low diet, persisted in for three weeks after the temperature becomes normal, half grain doses of calomel or two drachm doses of castor oil to move the bowels, are administered from time to time. The motto of Ewart in feeding typhoid patients is "plenty of food and no fæces." He gives two and a half pints of well salted peptonized whey in twenty-four hours, supplemented later by cream, sugar, eggs, vegetable broths, and fruit jellies. Such a diet leaves little or no residuum. Besides, giving charcoal freely, Ewart gives one-eighth grain of calomel every six hours and 2 drachm of liquid paraffin every four hours as a lubricant for the bowel and in order to exercise a healing effect upon the ulcers.

Ker's method is to secure antisepsis as far as possible by elimination and so far he is a disciple of Liebermeister. Calomel in doses of

from three to five grains (usually three grains) is given every second or third day and followed in from six to seven hours by irrigation of the large intestine with three to five pints of hot water. The calomel is given with the object of preventing stagnation in the ileum and at the same time any antiseptic action which it possesses may be of service. Ker believes that the calomel empties the small intestine into the large and the irrigation of the large intestine removes its contents and prevents the colicky pains and diarrhœa, so often experienced when calomel is given alone.

Calomel is contra-indicated in marked meteorism: when there is blood in the stool and when the temperature is running in almost a straight line with no remission, suggesting deep ulceration and threatened hæmorrhage and perforation.

The irrigation is slowly given with water boiled and at a temperature of 116° to 120°F. in the can raised only slightly above the level of the patient lying upon the left side with hips slightly raised. The fluid is retained as long as possible and then about two-thirds of it is passed, a second motion following later.

The diet given by Ker consists chiefly of milk, two pints and under in twenty-four hours. It is given with hot water in the proportion of two parts of milk and one of hot water. Water is given in large quantities.

In comparing the irrigation and calomel treatment with the so called expectant treatment, the diet in each series being the same except that in the irrigation and calomel series the patient was fed more liberally in early convalescence, a showing favourable for the antiseptic treatment is observed.

The statistics cover nine years and include 1,165 consecutive cases of enteric fever.

There were 397 cases treated by expectant plan with 11.83 per cent. of deaths, 8.06 per cent. of hæmorrhages, and 3.27 per cent. of perforations, and 5.79 per cent. of relapses; while 758 cases were treated by calomel and irrigation with 9.36 per cent. of deaths, 8.04 per cent. hæmorrhage, 1.71 per cent. of perforations, and 3.95 per cent. relapses.

Jez recently adds four case reports to the 100 previously reported, as having been treated by his antityphoid extract, given hypodermically or by the mouth. There are said to be no contra-indications to its use. There is an opinion growing in favour of its use. It is claimed that patients treated in this way experience a relief of all the symptoms, and the course of the fever is shortened from one to two weeks. This method however, is scarcely on trial as yet.

The method practised by Chantemesse in his hospital at Bastion 29 Paris and yet altogether in the hands of the inventor of the "anti-

toxine" has been reported upon as giving most satisfactory results, lessening the signs of toxæmia, promoting elimination, shortening the course of the disease and lowering the percentage of mortality in a very decided manner. So far as it is new, for Chantemesse applies the methods of his colleagues, baths, liquid diet, etc., it consists in the hypodermic administration of one dose of from three to five minims of typhoid-antitoxine, or serum early in the disease. So far as the profession is concerned this serum is unobtainable and all reports with one or two exceptions (M. Josias*) are from the observations of Chantemesse himself, who promises that when well tested he will give it to the profession.

PATHOLOGY.

UNDER THE CHARGE OF J. G. ADAMI.

Adler and Hensel. "Intravenous Injections of Nicotine and their Effects upon the Aorta of Rabbits." *Jour. Med. Research*, 1906, xv, p. 229.

The authors treated rabbits, by the intravenous inoculation of nicotine, for a period of eighteen to one hundred and ten days. Mercks' product was used in doses of one-third cubic centimetre of the one in two hundred solution. About ten seconds after each inoculation the animals had violent convulsions which, however, cleared off in three to five minutes. The animals developed no tolerance for the drug, and the convulsions occurred after each treatment with undiminished severity. The development of vascular lesions varied in the different animals,—in one case naked-eye changes were present after eighteen injections, while in another nothing was found after one hundred and ten doses. The lesions which do occur are similar to those produced by adrenalin, that is, there is extensive degenerative change in the media, affecting chiefly the muscle cells, which later become calcified. The intima shows no degenerative change. The authors believe that the arterial lesions are of a degenerative nature, a kind of necrosis, and they do not lay much stress on the rôle of the heightened blood pressure. The intima, they find, may show proliferation, so that this layer becomes thickened over the damaged media. The authors refrain from any decided opinion regarding the relation of these lesions in arterio-sclerosis in man.

NEUMANN. "Peptic Ulcers of the Stomach, Post-mortem and Pseudo-vital Auto Digestion." *Virchow's Archiv,* 1906, Bd. 184, Heft. 3.

The author attacks the subject from rather a critical standpoint, and does not side with any of the previous theories. The crux of the question, he points out, rests in whether living tissues can be digested by the gastric juice or its hydrochloric acid. The author believes that only such tissue which has been previously damaged is attacked by pepsin or trypsin, and that normal tissues possess a certain immunity against acids. Hence the stand must be taken that all tissues have a vital resistance to auto-digestion up to a certain degree. What then is the primary force which causes necrosis or other change in the stomach wall, which secondarily leads to the round ulcer?

The author does not support Virchow's contention of isolated mucosal degeneration due to vascular changes, nor the view of Klebs that anæmia of the stomach results from spasms of its vessels. Matthes pointed out that hyperacidity of the stomach juice prevented healing taking place in lesions, and held that this was an important factor in the production of a peptic ulcer. Neumann, however, finds that some cases never have hyperacidity, and further, that gastric ulcers do heal in the presence of hyperacidity.

He does not see in definite vascular disease or thrombosis a reason for peptic ulcers, but would rather support Nanwerck's findings of bacterial emboli, to explain the lesions. He points out that the occurrence of multiple ulcers, the finding of "contact" ulcers, and of simultaneous lesions in the duodenum are in support of a bacterial cause of the disease.

O. K.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The third regular meeting of the Society was held Friday evening November 2nd, 1906, Dr. F. G. Finley, President, in the Chair.

CONGENITAL DISLOCATION OF THE HUMERUS IN AN INFANT.

This case was presented by Drs. Hamilton White, A. MacKenzie Forbes and C. K. Russel, the report of which will be found on page 804 of this number of the JOURNAL.

A. E. GARROW, M.D.—I have not seen this form of dislocation of the humerus before. Since the history given by the writer would indicate

that the dislocation occurred during birth, I would class it among the traumatic dislocations, rather than among the congenital. Owing to the cartilaginous structure of the joint involved I fear the X-rays will throw but little light on the difficulties to be met with in reposition, and hence on the prognosis.

A. Mackenzie Forbes, M.D.—I think in my remarks I have particularly set forth that it was not as likely to be a pre-natal misplacement as a congenital dislocation, in other words a dislocation accompanying, or depending upon, birth.

OPERATION OF PUBIOTOMY.

D. J. Evans, M.D.—Reported a case in which he had performed this operation with successful results. The patient was brought before the Society for examination. Dr. Evans illustrated the operation by the use of charts and exhibited the instruments used.

J. C. Cameron M.D.— Dr. Evans is to be congratulated on the result of his operation. It certainly seems to have been an ideal case for Pubiotomy. The estimate which was made beforehand of the pubic dimensions, was very accurate; the Conj.-Vera estimated at 8.5 cm. was found to be 8.6 cm. by actual measurement when the patient was examined for discharge. After listening to the report of this case the first question which we should probably ask ourselves is, whether the result was better than it would have been had C. Section been performed, and if so, in what respects. In my opinion that woman left hospital in far better condition than she would have done had C. S. been done, and moreover the child was living and in good condition. The C. Section operation would have been a Porro; the patient would have been mutilated even if she had recovered, and the child would probably have perished on account of the time lost in dealing with the adhesions.

The chief value of Pubiotomy seems to be the narrowing of the field for C. Section, especialy for the *relative* indication. Of course there can be no question of pitting it against C. Section for the *absolute* indication. In minor degrees of pelvis contraction at the brim, pubiotomy will be of the greatest service; but the smaller the C. V. becomes, the more dangerous will the operation be for the child. Here in this case we have a pelvis with C. V. of 8.6; the child was born asphyxiated and was resuscitated with difficulty; if the C. V. had been 1 cm. less or had it been 7cm. which is usually regarded as the lowest limit, there can be very little doubt that the child would have perished, and what gain would there have been over the results of previous deliveries where Craniotomy was done? It would seem therefore, that Pubiotomy is to be preferred in cases of slight or moderate contraction of the brim.

With regard to the method of performing the operation, there are several practical points which this paper brings up. First, with regard to the amount of enlargement of the C. V. obtained by means of the operation. It has been the clinical experience in Germany, confirmed by Rontgen ray photographs, that the closer the incision is made to the Symphysis, and the more nearly parallel it is to the middle line, the greater will be the widening of the cut ends and consequently the greater the gain in the C. V. Conversely when the incision is made three or four fingerbreadths from the Symphysis or in a line oblique to the central line of the joint, the gain will be correspondingly less. If I had occasion to operate on a case where the C. V. was below 8 cm., I should take great care to make the incision as near as possible to the symphysis, and parallel to the middle line.

With regard to the subcutaneous method, I very much question whether it is altogether an advantage. There is always considerable effusion of blood after the bone is sawn through, and it must go somewhere. If it is not allowed to escape, it will form a hæmatoma more or less extensive in the labia or elsewhere; but if it is allowed to escape through a small opening, such a hæmatoma is not so likely to form, and the hæmorrhage need never be severe, for it can be checked promptly by packing some moist gauze into the wound. Our experience here with Symphysiotomy has been that the best results are obtained by one small incision down upon the top of the Symphysis, through which the finger can be passed, the knife guided during the cutting, and the operation done almost subcutaneously. It seems to me that the same technique applied to Pubiotomy should give equally satisfactory results. Another point which struck me in this case was made before discharge from hospital, the uterus was found to be in good position, and the soft parts involuted and in excellent condition. In our symphysiotomy cases, although the patient seemed to be in good shape when discharged from hospital, prolapse and subsequent troubles developed. The good success in this case was attributable largely, I think, to the fact that the patient was kept so long in bed, and that involution had a chance to be well established. In the earlier days, there was great haste in getting patients up and out of hospital; experience has proved that to have been a mistake in Symphysiotomy, I think that it would be equally a mistake in Pubiotomy. This case is extremely interesting from many points of view, and I think we may safely conclude that in Pubiotomy we have an operation which has a definite field, and that it limits considerably C. Section for the relative indication, especially in flat pelves where the flattening is only slight or moderate; but where the flattening is extreme,

Pubiotomy is too dangerous for the child and C. Section is to be preferred.

D. J. Evans, M.D.—I quite agree with Dr. Cameron's remarks in regard to the indications for the operation being the smaller degrees of pelvic contractions and not the more marked degrees. For the latter probably Cæsarean section will always hold its place. The danger of incising the pelvic bone close to the middle line, has been that the lack of nourishment to the small fragment may lead to its necrosis or its non-union, but that is a theoretical objection which hitherto has never been recognised in practice.

PRIMARY CARCINOMA OF THE APPENDIX.

A. E. Garrow, M.D. and C. B. Keenan, M.D.—Dr. Garrow read the report of this case.

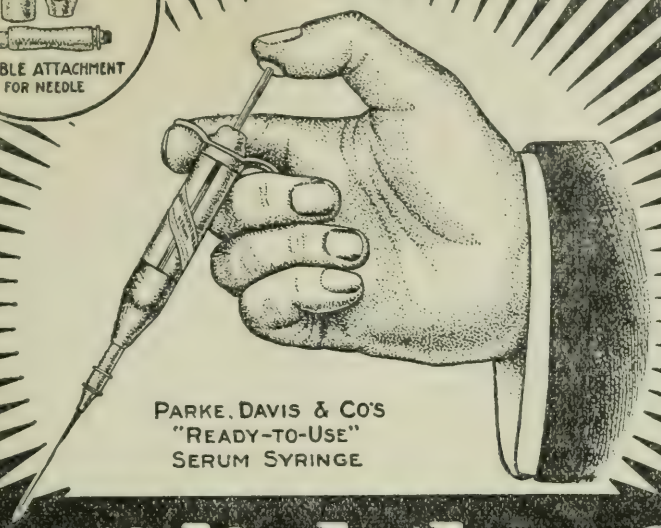
THE SO-CALLED INFANTILE PARALYSES.

A. Mackenzie Forbes, M.D. read the paper of the evening upon "The So-called Paralyses of Infants."

A. E. Garrow, M.D.—I would like to ask if the author has had any practical experience with transplantation or grafting of nerves into the paralysed trunks, to secure improved nerve tone to the paralysed muscles.

W. F. Hamilton, M.D. I would like to ask whether children born prematurely, and yet viable and live fairly healthy lives, are more liable to anterior poliomyelitis than other children. About a year ago I saw a child, six months of age who had been born about a month prematurely. She had recently suffered a febrile attack subsequent to which there developed definite signs of poliomyelitis involving the left leg to a considerable extent and then gradually developed a complete disability in the use of the lower extremity. It was such a case as I had never seen before, the earliest development, so far as I know, of the lesion known as anterior poliomyelitis. It occurred to me that the premature birth may have had some influence in determining the early incidence of the disease.

A Mackenzie Forbes, M.D. With reference to Dr. Shirres's remarks about electricity: I think this should be used as should all agents from which any benefit can be derived but, perhaps, I am a little prejudiced in favour of massage: as he is, perhaps, a little prejudiced in favour of electricity. As far as Dr. Hamilton's question is concerned, I have never heard of a similar case to the one quoted by him. In answer to Dr. Garrow's question; I have had no practical experience with nerve transplantation, because it has not as yet been proved to my satisfaction that one is justified in using it except in exceptional cases.



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The Care of Growing Girls.—One of the most responsible tasks of the family physician is to advise parents of girls entering upon their 'teens, as to the diet, mode of life, and hygienic measures best calculated to preserve the health of budding womanhood. In dealing with these cases the practitioner is often called upon to treat the anemia which in such a large proportion of instances characterizes the unfolding of the growing girl. Full well does the family doctor grasp the meaning of this anemia, and the vast importance of combating it before it is too late,—before the impoverished condition of the blood of puberty has left its imprint upon the powers of resistance of the adult organism; has done permanent damage to the future woman and the future mother.

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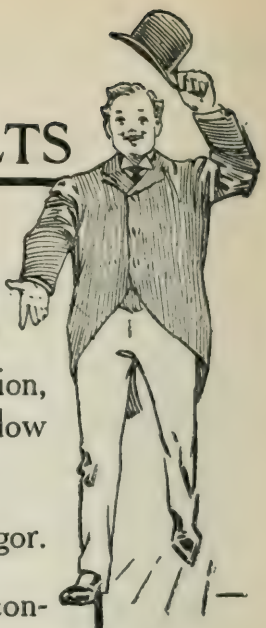

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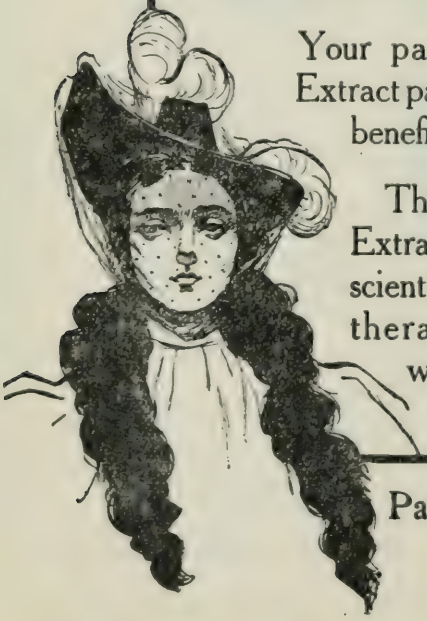

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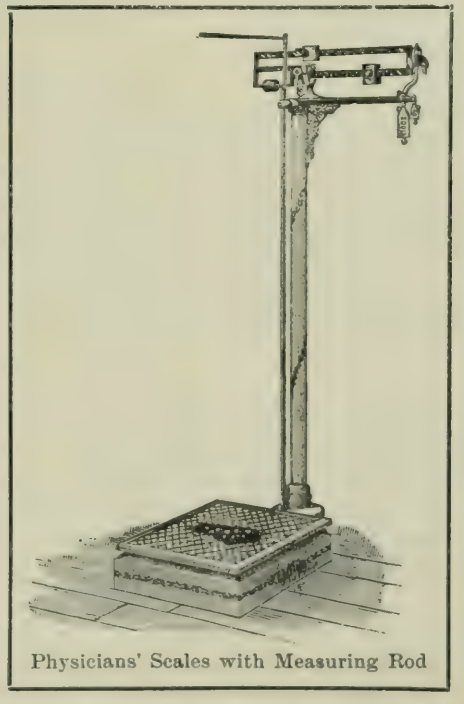

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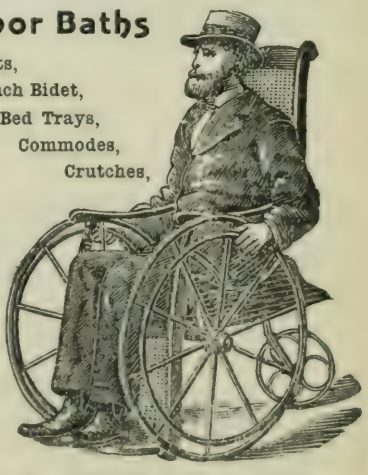

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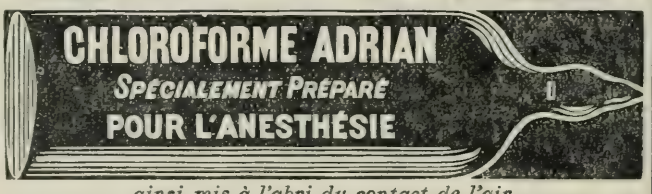

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(Acid Calcium-Magnesium and Anhydro-oxymethlen-disphosphoric acid) containing 22.8% of phosphorus in organic combination in a completely assimilable and non-poisonous form.

EXTRACTED FROM THE SEEDS OF PLANTS

Phytin stimulates to a high degree the assimilation, and is therefore the only strength-giving product creating appetite, forming blood and increasing the weight. Of special value in cases of nervousness and nervous insomnia. See articles by Prof. Gilbert, Dr. Loewenheim, Dr. Wechsler, Dr. Fuerst, Prof. Giacosa, Dr. Brinda, Prof. Renon, Dr. Winterberg, etc., etc.

The conditions for the application of Phytin are those of the general Phosphorus remedies.

DOSE—For Adults, 1 grain daily. For Children, 2 to 6 years 0.25 to 0.5 gr.; 6 to 10 years, 0.5 to 1.0 gr. daily.

IN ORIGINAL BOXES

FORTOSSAN

For infants up to two years we produce a neutral, soluble preparation of Phytin and sugar of milk in 2.5 grain tablets, under the name of Fortossan

Fortossan stimulates the appetite, improves the state of nourishment of the child and helps it to normal growth.

Does not prevent the sterilization of the milk after being added to it.

Specially recommended in cases of artificial nursing, retarded development, slow growth, rachitis, scrofula, convalescents of all descriptions.

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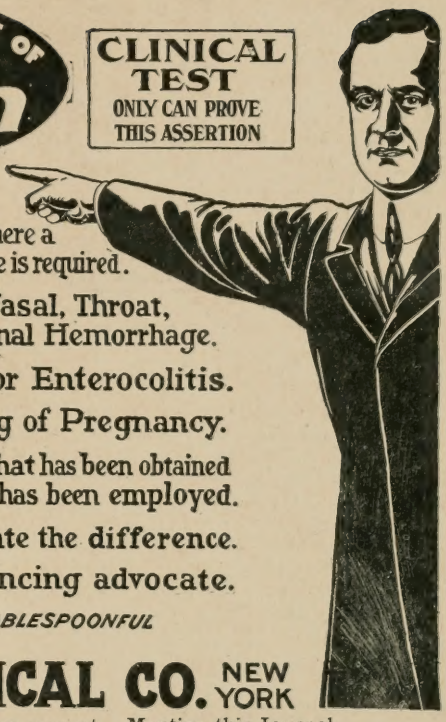

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